

# Microsoft Azure Stack Development Kit on Cisco UCS C-Series Rack Servers

## 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 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 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 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.

## 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 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 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 be used for production. The POC runs in a suite of virtual machines that emulate an Azure Stack implementation. In a POC environment, all the Azure Stack virtual machines run on a single physical host. The production Azure Stack 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 the production Azure Stack will when it is released, projected for mid-2017.

## Links to Azure Stack Development Kit

The current POC version is Technical Preview 3 (TP3) and 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.

## Server Requirements

Before you deploy the Azure Stack 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 Development Kit

| Component  | Minimum   | Recommended   |
|--|---|---|
| <b>Disk drives:<br/>Operating system</b>                 | 1 OS disk with a minimum of 200 GB available for system partition (solid-state disk [SSD] or hard-disk drive [HDD]) | 1 OS disk with a minimum of 200 GB available for system partition (SSD or HDD)                    |
| <b>Disk drives:<br/>General Azure Stack<br/>POC data</b> | 4 disks, each with a minimum of 140 GB of capacity (SSD or HDD); all available disks will be used                   | 4 disks, each with a minimum of 250 GB of capacity (SSD or HDD); all available disks will be used |
| <b>Computing: CPU</b>                                    | Dual-socket with 12 physical cores (total)  | Dual-socket with 16 physical cores (total)  |
| <b>Computing: Memory</b>                                 | 96 GB of RAM  | 128 GB of RAM   |
| <b>Computing: BIOS</b>                                   | Hyper-V enabled (with SLAT support)   | Hyper-V Enabled (with SLAT support)   |
| <b>Network:<br/>Network Interface<br/>Card (NIC)</b>     | Windows Server 2012 R2 or 2016 certification required for NIC ; no specialized features required                    | Windows Server 2012 R2 or 2016 certification required for NIC ; no specialized features required  |
| <b>Hardware logo<br/>certification</b>                   | Certified for Windows Server 2012 R2 or Windows Server 2016   | Certified for Windows Server 2012 R2 or Windows Server 2016                                       |

## Cisco Evaluation Configuration

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

Cisco is certifying its Cisco UCS<sup>®</sup> C240 M4L Rack Server (large form factor) for use in Azure Stack when it is released to the general public. Microsoft is requiring system vendors to certify a complete system— memory, processor, NIC, Host Bus Adapter (HBA), disk drives, BIOS, firmware, etc.—as an integrated solution. It will not support any other noncertified configurations. In other words, customers cannot pick and choose the components they want to use for an Azure Stack deployment unless the system vendor has certified that specific configuration with Microsoft.

Even though Cisco is certifying the C240 M4L, 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 on hardware that will be as much like a production system from Cisco at time of Cisco's system GA, you should configure it on a C240 M4L.

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 M4L configured for single-node Azure Stack Development Kit code cannot be upgraded to an Azure Stack node for the integrated system to be bundled and sold with production versions of Azure Stack.

---

## Benefits of Using the Azure Stack Development Kit

Deploying an Azure Stack 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 Development kit or POC is readily transferrable to either the Azure or Azure Stack production version when it becomes available.

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

- For application developers, Azure Stack 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 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 and Azure unchanged for both Windows Server and Linux. Because Azure Stack 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, 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 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.
- Because Azure Stack 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 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 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:
2. Go to the Microsoft download site <https://azure.microsoft.com/en-us/overview/azure-stack/development-kit/>. Register and start the download. 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 and start learning.

Microsoft has put a significant amount of effort into the Azure Stack 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/> 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>

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 at this time. Please contact your Cisco® sales representative or partner for Cisco UCS C-Series product support and pricing.




---

**Americas Headquarters**  
Cisco Systems, Inc.  
San Jose, CA

**Asia Pacific Headquarters**  
Cisco Systems (USA) Pte. Ltd.  
Singapore

**Europe Headquarters**  
Cisco Systems International BV Amsterdam,  
The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at <https://www.cisco.com/go/offices>.

 Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)