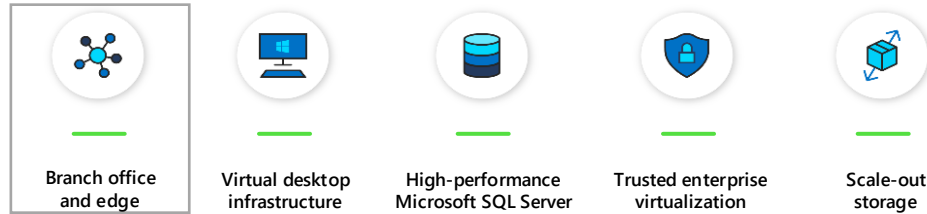


Technical Use Cases
for Azure Stack HCI



Leverage your Azure Stack HCI investment to run key virtual applications and workloads in a highly available, resilient fashion on hardware designed for Branch office and edge scenarios with industry-leading support for 2 node configurations including: [Nested resiliency](#), [USB thumb drive cluster witness](#), and browser-based administration via [Windows Admin Center](#). Below, you will find a how-to guide for Azure Stack HCI Branch office and edge configurations that includes:

- Plan and deploy <HW partner> hardware and OS/tools to support Azure Stack HCI Branch office and edge scenarios
- Step by step documentation to enable Branch office and edge support including IoT and cloud-driven Container management

1. Hardware and OS configuration for Branch office and edge environments



QCT QuantaGrid D52BQ-2U Performance

- Scale:
- 2 to 4 nodes
- Single Node Data:
- CPU: 20-56 cores (Intel)
 - RAM: 256GB to 768GB
 - Raw storage: 2TB to 48TB
 - Storage type: SSD
 - Network speed: Up to 25Gb

[Learn more >](#)

QCT QuantaGrid D52B-1U

- Scale:
- 2 to 4 nodes
- Single Node Data:
- CPU: 20-56 cores (Intel)
 - RAM: 256GB to 768GB
 - Raw storage: 12.8TB to 38.4TB
 - Storage type: NVMe
 - Network speed: Up to 25GB

[Learn more >](#)

❖ Server: [QuantaGrid D52BQ-2U](#); 2-4 nodes

- CPU: Intel® Xeon® Scalable processors with Silver, Gold and Platinum options
- RAM: 256 GB~768GB
- HBA: SAS 9305-16i
- NIC: 1x Quanta OCP Mezz CX4, Dual Port 25G or 1x Q.logic 41212, Dual Port 25G
- Capacity: 4~24x SATA SSD 480GB/960GB/1.92TB

❖ Server: [QuantaGrid D52B-1U](#); 2-16 nodes

- CPU: Intel® Xeon® Scalable processors with Silver, Gold and Platinum options
- RAM: 256 GB~768GB
- NIC: 1x Quanta OCP Mezz CX4, Dual Port 25G or 1x Q.logic 41212, Dual Port 25G
- Capacity: 4~12x NVMe SSD 3.2TB

❖ Switch: 1x TOR [QuantaMesh T4048-IX8D](#) or 1x UTM/AP (Enterprise)

❖ OS: Windows Server 2019 Datacenter Edition

Plan Hardware Deployment

✧ Hardware:

For middle size branch office:

The two to four nodes of servers are connected using a Mellanox based 10/25 GbE Ethernet RDMA cards and support DCB/PFC/ETS Ethernet switch.

For small size low-cost branch office:

The two nodes of servers are connected using a UTM/AP with USB storage as Fileshare Witness.

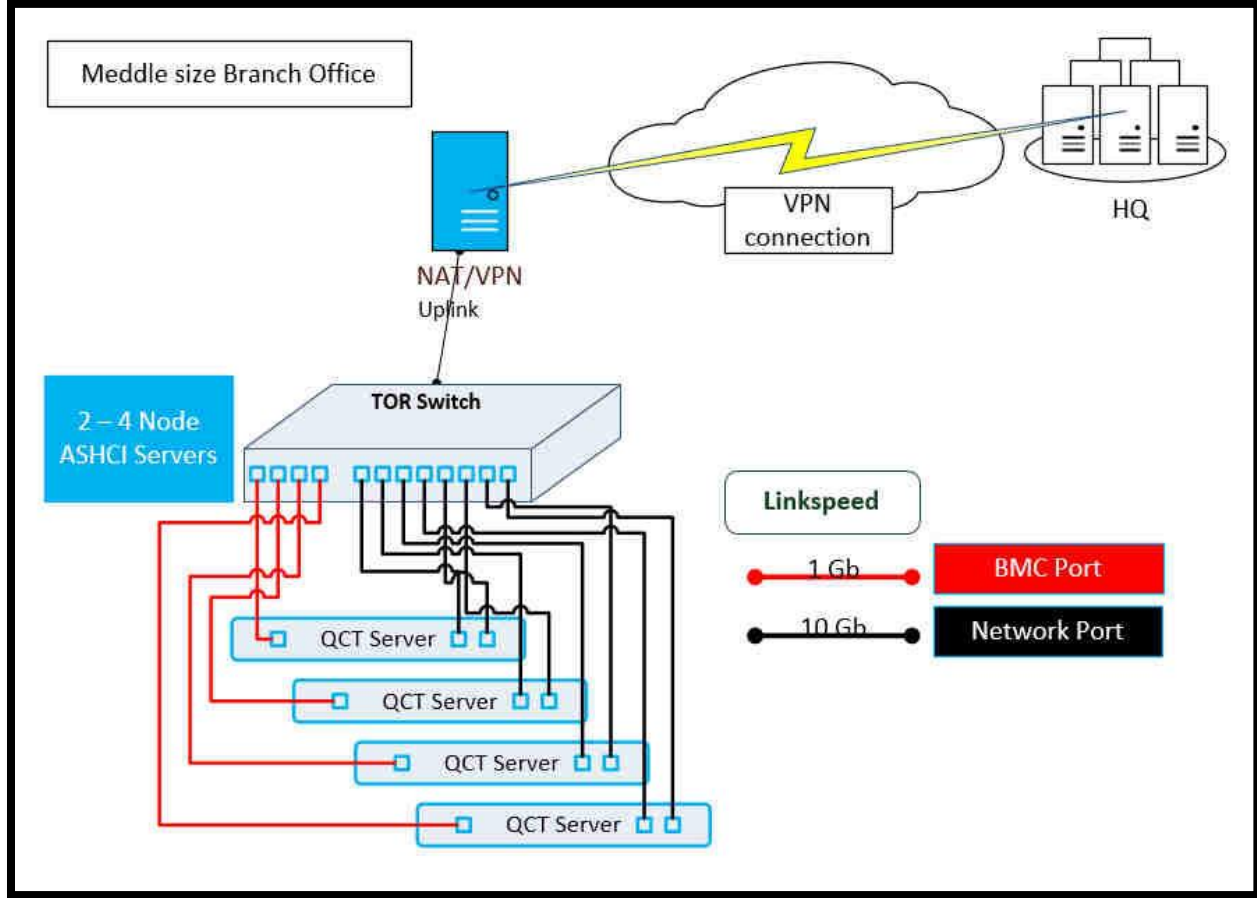
The SSD drives were added to a single Storage Spaces Direct pool with multiple volumes based on the number of QCT S2D server nodes.

✧ Software:

Each server ran Windows Server 2019 Datacenter Edition and participated in a Windows Failover Cluster (required for Storage Spaces Direct).

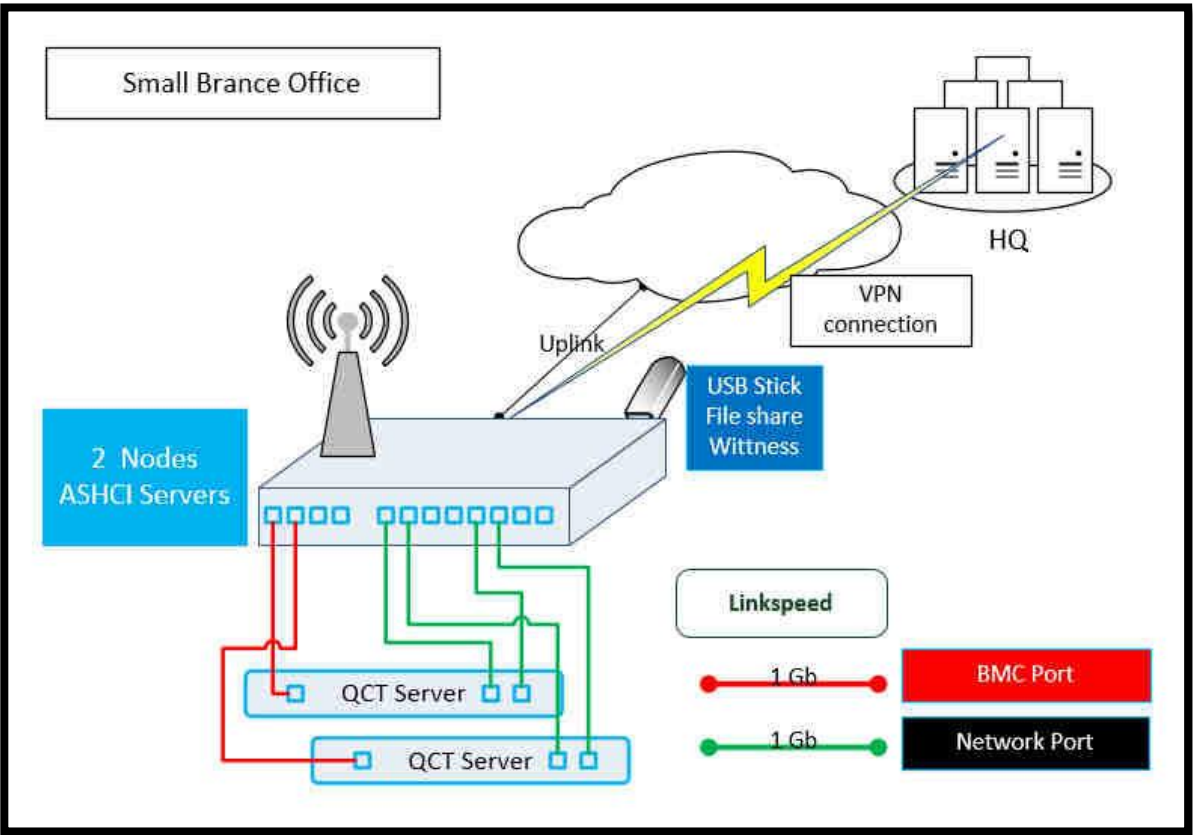
Volumes were configured for operating system (OS), data and log drives as 2-way mirrored volumes, resulting in one local copy of data, and one remote copy on other nodes.

Network and Switch Connectivity



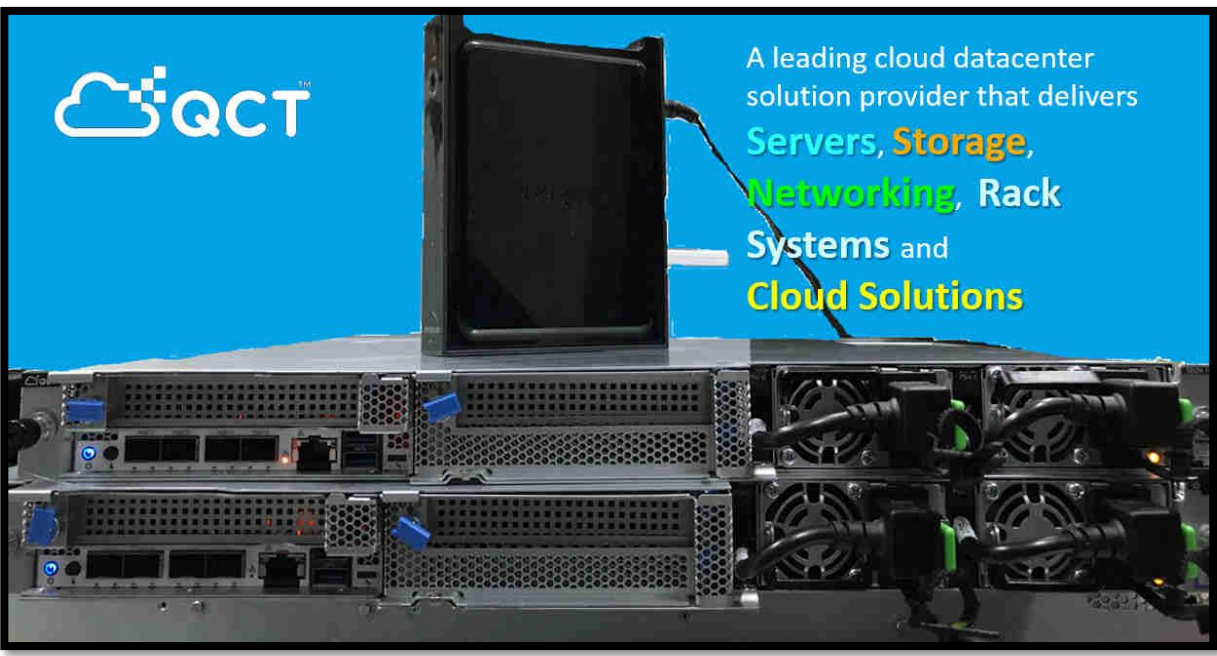
For middle size branch office:

The two to four nodes of servers are connected using a Mellanox based 10/25 GbE Ethernet RDMA cards and support DCB/PFC/ETS Ethernet switch.



For small size low-cost branch office:

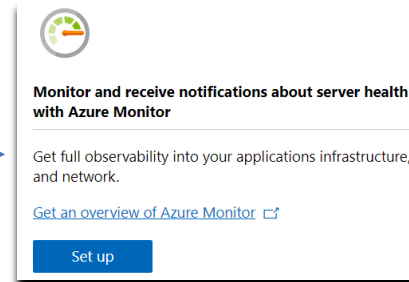
The two nodes of servers are connected using a UTM/AP with USB storage as Fileshare Witness.




[Step by Step guide to deploy Azure Stack HCI](#)

1. Install Windows Server 2019 Datacenter (follow guidance above in network connectivity for Clustering)
2. Add Roles and Features
3. Setup Failover Clustering and enable a Cluster Witness
4. Setup Storage Spaces Direct
5. [Install Windows Admin Center \(WAC\)](#)

From Windows Admin Center (WAC), Set up **Azure Monitor** to gain insight into your application, network and server health of your Azure Stack HCI Branch office and edge deployment.



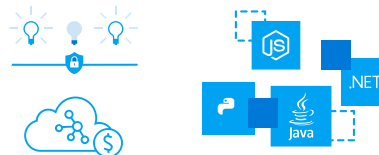
Additionally, you can Set Up additional  Azure hybrid services such as Backup, File Sync, Site Recovery, Point-to-Site VPN, Update Management, and Security Center in WAC.

2. Enable Branch office and edge Modern Application Support

Once your Azure Stack HCI Branch office and edge setup is complete, follow the steps below to enable your environment to support modern Container-based application development and IoT data processing by deploying a VM running Azure IoT Edge.

What is [Azure IoT Edge](#)?

- *Open source software from Microsoft*
- *Runs on Windows or Linux*
- *Built to run "on the edge" for near-real time responses*
- *Secured by software and hardware mechanisms*
- *Available AI Toolkit*
<https://github.com/Azure/ai-toolkit-iot-edge>
- *Open programmability: Java, .Net Core 2.0, Node.js, C and Python support*
- *Offline and intermittent connectivity support*
- *Natively managed from Azure IoT Hub*



...combines AI, cloud and edge computing to containerize cloud workloads—such as Azure Cognitive Services, Machine Learning, Stream Analytics, and Functions—and run them locally on devices from a Raspberry Pi to an industrial gateway or converged edge server and manages edge applications / devices with Azure IoT Hub.

How do I deploy Azure IoT Edge on Azure Stack HCI?

1. [Create a VM on your Azure Stack HCI using Windows Admin Center](#)
(For supported OS versions, VM types, processor architectures and system requirements, click [here](#))
2. If you do not already have an Azure account, get your free account [here](#)
3. [Create an Azure IoT Hub](#) in the Azure Portal
4. [Register an IoT Edge device](#) in the Azure Portal
(The IoT Edge "device" is the Windows or Linux VM running on your Azure Stack HCI installation)
5. [Install and start the IoT Edge runtime](#) on the VM you created in step 1
(You will need the device string created in step 4 above to connect the runtime to your Azure IoT Hub)

6. [Deploy a module to IoT Edge](#)

(Pre-built modules can be sourced and deployed from the [IoT Edge Modules section of the Azure Marketplace](#))

NOTE: In addition to gathering and processing IoT data from IoT sensors, Azure IoT Edge can also be utilized to deploy Containers with general purpose usage capabilities. Adding Azure IoT Edge to your Azure Stack HCI Branch office and edge deployments modernizes your environment to support [CI/CD pipeline](#) application deployment framework. Your DevOps personnel can deploy and iterate on Containerized applications that IT builds and supports via traditional VM management processes and tools.

Summary

With completion of the Azure Stack HCI Branch office and edge deployment and the installation and configuration of Azure IoT Edge, you now have a platform capable of running complex, highly available workloads in VMs and Containers for Branch office and edge deployments.