

# Managed EdgeCloud with Cisco and NetApp

Bring the cloud closer to your customers

## The Challenge

Private and public enterprises of all sizes are moving, or would like to move, workloads to the cloud. But they have concerns about the security, visibility, and agility they might lose when doing so. They want to take advantage of new technologies, the Internet of Things, big data, and more, but they struggle to keep up with the rapid pace of technology change and the expertise required. This is especially true for smaller or remote sites where IT staff and expertise are limited or nonexistent. For cloud service providers and managed service providers leveraging the Cisco Cloud Architecture for the Microsoft Cloud Platform, the Managed EdgeCloud solution addresses these issues.

Managed EdgeCloud enables you to quickly and easily deliver a dedicated hosted private cloud to your customer. EdgeCloud is a low-cost, on-premises converged infrastructure solution preintegrated with Cisco, NetApp, and Microsoft products. EdgeCloud is managed and supported remotely, delivered seamlessly as a subscription by a managed service provider or systems integrator. The on-premises infrastructure consists of Windows Server, Hyper-V, and System Center components running on Cisco UCS® Mini and includes compute, network, NetApp® FAS/AFF storage, and security. A centralized cloud-based web portal powered by Windows Azure Pack delivers a seamless role-based experience to partners and their customers.

## Going Out to the Edge Is Not Going Out on a Limb

Large, midsize, and small businesses; educational institutions; and government entities alike are moving IT to the cloud and consuming infrastructure (IaaS), platform (PaaS), and software as a service (SaaS). This year and beyond, there are tremendous opportunities for cloud providers to capitalize on these trends.

## Key Benefits

### End-Customer Benefits

- There is no need for IT staff to manage the appliance.
- You get local application performance with cloud provider features (backup, DR, and so on).
- The solution is easy to grow as demands increase.
- You can leverage a broad range of existing cloud provider services.
- Capex and opex are reduced.

### Cloud Provider Benefits

- You leverage existing operations toolsets to manage remote environments.
- Deployment choices are flexible enough to meet a variety of customer needs.
- The solution drives consumption of SP-hosted cloud services (backup, disaster recovery, big data, and so on).
- The cloud provider controls all IP address space and VLAN assignments.
- The appliance can be deployed anywhere. Every cloud provider can be an over-the-top provider or leverage its existing wireline infrastructure for end-to-end SLAs.



Some expected market opportunities include:

- \$24.0B—Hosted private cloud market<sup>1</sup>
- \$13.5B—Hosted unified communication and collaboration market<sup>2</sup>
- \$39.9B—Database as a service (DBaaS) market<sup>3</sup>
- \$19.7B—SaaS CRM market<sup>4</sup>

Edge computing pushes processing for data-intensive, remotely isolated applications away from the core of the data center to the edges of the network where interactions and transactions happen and where processing needs to take place.

Cloud providers, managed service providers, and system integrators typically provide services that might include architectural design, deployment, monitoring, servicing, backups, business continuity/disaster recovery, and support for traditional workloads. These environments might be deployed in the service provider’s data center, on the premises at their client, or in the Azure cloud. Traditionally, remote assets are managed using remote console connectivity through a variety of software vendors with less than ideal results. Managed EdgeCloud solves this problem by providing a consistent, reliable, repeatable platform to customers who require on-premises infrastructure and who wish to outsource their IT management.

The Managed EdgeCloud solution infrastructure fabric can be customized using one of several preconfigured sizes to accommodate specific business needs and be scaled on demand as needs change.

## Product Specifications

	Standard	Flash-Enabled
Compute	UCS Mini (UCS 5108 and FI 6324) 4 x B200 servers • 2 x E5-2660 10-core CPU • 256GB RAM	
Network	Cisco® ISR 4431	
Storage	FAS2552 • 20 x 900GB SAS • 4 x 400GB SSD	AFF8040 • 24 x 800GB SSD
Rack	Rittal 24U cabinet	
UPS	Eaton 9PX6K with external battery pack	

## Solution Characteristics

	Standard	Flash-Enabled
Compute	• 80 CPU cores • 1TB RAM	
Network	• 40Gb network • Secure network backhaul	
Usable storage	• 12TB capacity • 1.6TB flash	14TB flash capacity
Height	24U	

Table 1. Tenant solution components.

## The Solution

The EdgeCloud solution addresses customers’ security, visibility, and agility concerns with four key components:

1. Services-Oriented SDN
  - Any device, location, access
  - Policy-defined services
  - Federated, zero trust
  - End-to-end SLA tracking and auditing
2. Dynamic Service Provisioning
  - Configure firewall, VPN, QoS services on the fly
  - Each component service can be uniquely orchestrated
  - Seamless service delivery
3. Cloud Service Marketplace
  - Service catalog
  - Service policy management
  - Usage metering
4. Customizable User Environments
  - Service portal
  - Each instance can be customized

## Environment

Two environments comprise Managed EdgeCloud: management and tenant. The management fabric is hosted at the service provider’s data center, which consists of compute, network, and storage hardware running the Microsoft Cloud Platform.

The customer/tenant fabric is hosted on the customer’s premises and consists of converged infrastructure (compute, network, and storage hardware) running components of the Microsoft Cloud Platform. Tenants manage resources through a single Windows Azure Pack and System Center stamp in the management fabric.

1. IDC, "Worldwide Hosted Private Cloud Services 2012–2016 Forecast: New Models for Delivering Infrastructure Services," December 2012  
 2. IDC, "Worldwide Unified Communications and Collaboration 2014–2018 Forecast," doc #252341, November 2014  
 3. Microsoft internal analysis, 2012  
 4. IDC, "Worldwide SaaS Enterprise Applications 2014–2018 Forecast and 2013 Vendor Shares," doc #252568, December 2014

## Network

Each tenant location is connected to the cloud provider's data center through a site-to-site VPN tunnel. A Cisco ISR 4k router running in the tenant environment facilitates the VPN tunnel and provides network connectivity upstream.

Traditional VLANs are implemented in the management environment for supporting management VMs with Hyper-V network virtualization used for hosted tenant assets at the service provider's data center. Traditional VLANs are implemented in the tenant environment for tenant workloads and connected to a virtual router hosted on the tenant fabric.

## Storage

NetApp storage in the tenant environment provides all tenant data storage and also enables the cloud provider to preprovision workload templates for tenant use.

Flash configuration options provide the right balance between low latency and cost effectiveness. Choose the configuration that best matches the customer's edge computing needs.

Integrated Data Protection and application awareness enable service providers to deliver file-consistent and application-consistent automated or point-in-time snapshots. Snapshots can provide local or cloud backup and recovery.

Storage efficiency technologies increase the effective tenant capacity through deduplication, compression, and thin cloning of user data.

## Active Directory and Identity

To create appropriate security boundaries, a dedicated Active Directory forest is deployed for the

## Use Cases

Vertical	Use Case
Remote Office	Virtual desktops Office 365 Backup/DR Latency-sensitive apps
Education	Virtual desktops Office 365 Backup/DR
Energy	Big data and analytics Latency-sensitive apps Backup/DR
Government	Disaster response Ruggedized deployable
Healthcare	Practice management EMR PACS Backup/DR

Table 2. There are many possible use cases for your customers using the Managed EdgeCloud solution

management fabric, with dedicated tenant resource domains per customer for tenant infrastructure. Both a tenant's premises and management premises or Azure hosted domain controller are provisioned for each tenant resource domain to provide redundancy.

Either an existing on-premises tenant domain, a new tenant domain hosted on tenant compute infrastructure, or a multitenant cloud provider-hosted domain is synchronized with Azure Active Directory. This capability allows claims-based authentication to the tenant Windows Azure Pack portal using an Azure Access Control Namespace.

## Roles

Standard PLA guidelines apply for deploying the Microsoft Cloud Platform in the management environment. In addition to tenant compute and storage, the tenant fabric hosts several Microsoft Cloud Platform components suited for local

access. These include roles such as System Center Virtual Machine Library and Windows Software Update Services.

## Monitoring and Management

Key to any managed service practice is the ability to effectively monitor and manage a remote environment. System Center Operations Manager (SCOM) and Azure Operations Management Suite (Azure OMS) provide the tools necessary to administer and maintain Managed EdgeCloud. A SCOM gateway server running locally on the tenant fabric aggregates performance and alerting data from the resource domain to feed back to the SCOM management group. Tenant workloads can be managed using certificate-based authentication. Azure OMS connects to SCOM to populate data for consumption by OMS intelligence packs.

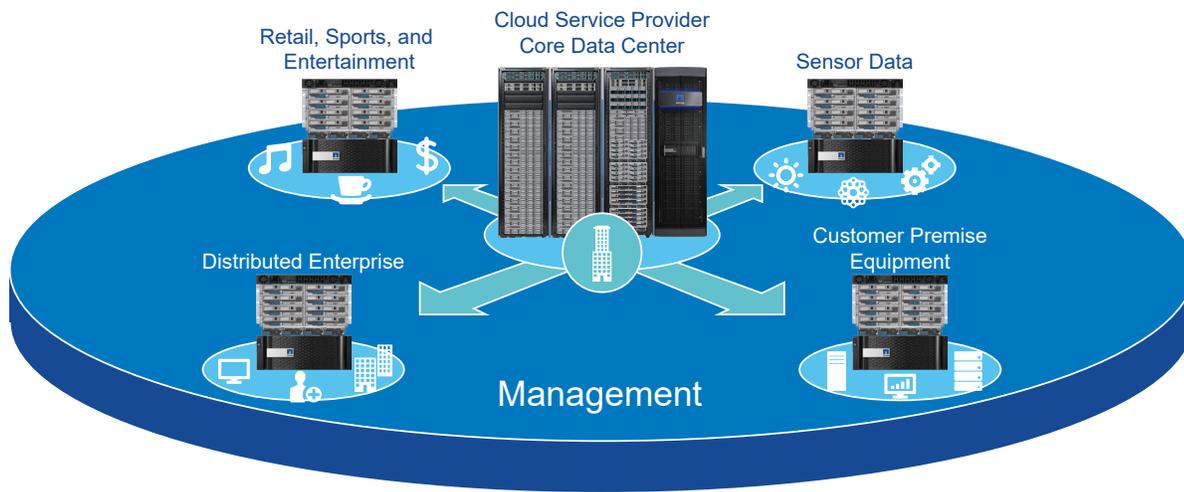


Figure 1) Managed EdgeCloud with Cisco and NetApp: Placing computing at the source of demand.

### Why Cisco and NetApp?

The Cisco Cloud Architecture for the Microsoft Cloud Platform allows cloud providers to quickly deploy services to market in a fraction of the time compared to that of traditional product development cycles. Now, with the Managed EdgeCloud solution, cloud providers can bring new capabilities and services to their customers in small, remote, and branch locations where cloud performance and control issues have been barriers to adoption.

Cisco UCS Mini with NetApp storage offers an excellent self-sufficient infrastructure solution that meets both enterprise-class computing and networking requirements. With Cisco UCS Central Software, the solution is cost effective to deploy and manage.

This complete end-to-end Managed EdgeCloud solution looks like an extension of the main data center infrastructure from deployment and management perspectives.

With the power of Cisco Cloud Architecture solutions, cloud providers' time to market for new services is drastically reduced. You benefit from faster time to value, lower engineering costs, and the ability to deliver a critical value-added service offering to your customers. Cisco, NetApp, and Microsoft also provide enhanced partner programs and go-to-market support, including the following:

- The Cisco Powered™ Program includes training, sales enablement, awareness, and demand generation.

- The Cisco Intercloud ecosystem is a growing partner community of over 250 data centers in 50 countries, including VARs, system integrators, aggregators, distributors, ISVs, and a number of cloud service providers.
- The NetApp Service Provider Program supports you through the process of designing, deploying, selling, and supporting your IT-as-a-service solutions. Leverage NetApp expertise, tools, and program benefits.
- Microsoft Azure Certified for Hybrid Cloud provides you with training, sales enablement, awareness, and demand-generation benefits as well as the ability to offer a hybrid cloud and Azure-enabled solutions.

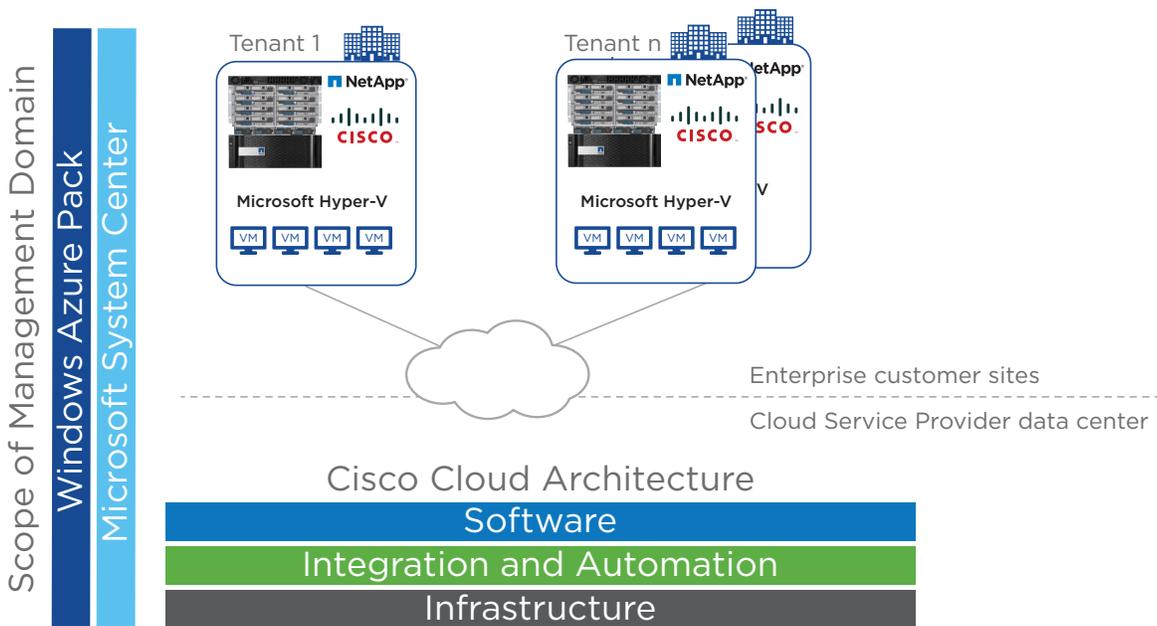


Figure 2) Extending CCA to Enable a Dedicated Private Cloud.

### Cisco Capital

#### Financing to Help You Achieve Your Objectives

Cisco Capital can help you acquire the technology you need to achieve your objectives and stay competitive. We can help you reduce capex. Accelerate your growth. Optimize your investment dollars and ROI. Cisco Capital financing gives you flexibility in acquiring hardware, software, services, and complementary third-party equipment. And there's just one predictable payment. Cisco Capital is available in more than 100 countries. Learn more at [www.cisco.com/web/ciscocapital/index.html](http://www.cisco.com/web/ciscocapital/index.html).

### Get Edgy

The opportunity to bring the cloud to the edge of your customers' networks with a strong value proposition for them is new and expansive. Managed EdgeCloud with Cisco and NetApp provides the best of both worlds for your customers and you. Your customers retain security and control locally while reducing costs, improving performance, and gaining your cloud provider expertise and services.

For more information, contact your Cisco account manager and visit:

- [www.cisco.com/go/ccamcp](http://www.cisco.com/go/ccamcp)
- [www.cisco.com/c/en/us/products/servers-unified-computing/ucs-mini/index.html](http://www.cisco.com/c/en/us/products/servers-unified-computing/ucs-mini/index.html)
- [www.netapp.com/serviceprovider](http://www.netapp.com/serviceprovider)

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