VMware HCX for Application Migration

Large-scale, automated VM migration

AT A GLANCE

VMware HCX®, an application mobility platform, simplifies application migration, rebalances workloads and optimizes disaster recovery across data centers and clouds. This software-as-as-service (SaaS) offering enables high-performance, large-scale app mobility across VMware vSphere® and non-vSphere cloud and on-premises environments to accelerate data center modernization and cloud transformation.

HCX automates the creation of an optimized network interconnect and extension, and facilitates interoperability across KVM, Hyper-V and vSphere 5.0+ to current vSphere versions. This delivers live and bulk migration capabilities without redesigning the application or re-architecting networks.

The maturity of public and private cloud offerings has created new opportunities for organizations to improve agility, lower TCO, and accelerate innovation through leveraging scalable infrastructure, automation and development tools previously unavailable. To realize those benefits, teams are challenged to migrate business-critical applications to the optimal environment to meet security, compliance, performance, availability and financial needs.

As businesses consolidate data centers, extend data centers to the cloud or replace on-premises infrastructure, they must consider application migration challenges from infrastructure incompatibilities and network complexity to moving workloads without disrupting application dependencies. Some common workload migration challenges include:

- Mission-critical apps require migration without downtime.
- Migrated apps typically suffer from performance degradation.
- WAN and LAN traffic impacts require a maintenance window with reduced usage of infrastructure.
- Migration windows can span multiple months due to size, distance and network latency/loss.
- A new IP platform needs to be re-architected for smooth switchovers, which requires purchasing additional hardware or software.
- Application rollback can be complex.

The VMware HCX platform automates the creation of a hybrid interconnect to enable IT administrators to easily and securely migrate workloads to the cloud while maintaining IT best practices, operations and business continuity. Leveraging HCX for application mobility accelerates data center transformation and hybrid cloud adoption with seamless migration of VMware vSphere and non-vSphere workloads on premises and in the cloud without upgrading vSphere versions on premises. Enabling secure, large-scale, zero-downtime live migrations can accelerate time to value for new software-defined data center (SDDC) stacks and cloud environments while driving down operational costs to update, migrate and maintain disparate systems.

"More enterprises are realizing the benefits of moving workloads to the cloud. Currently, 65 percent of enterprises run at least some business-critical workloads in the cloud, and by 2030, it's predicted 90 percent of all applications will live in the cloud."[1]

GARTNER

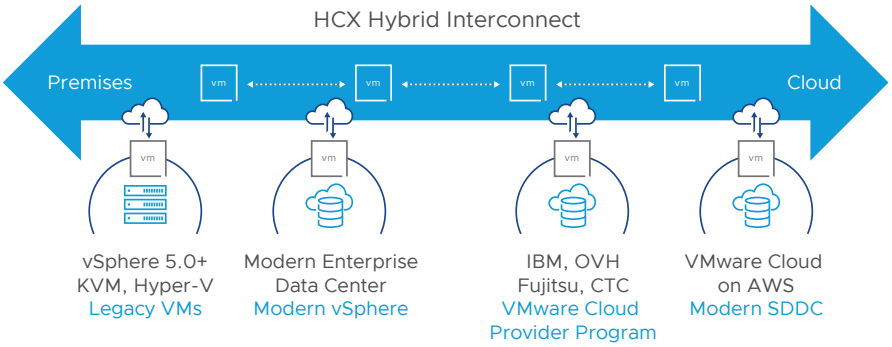

FIGURE 1: Move VMs to and from on-premises and cloud data centers enabled with VMware HCX.

Key capabilities

Migrate with zero downtime – Don't worry about IP re-architecting.

Perform a bulk migration at scale – Workflows exist for moving hundreds of virtual machines (VMs) in parallel compared to one VM at a time.

Work across the WAN and LAN – This enables a unique model of infrastructure with a mix of private, public and hybrid clouds, based on workload requirements.

Automate the network – This includes network stretching, proximity routing, WAN optimization, Suite B encryption and traffic engineering.

Migrate across any vSphere versions (5.0+) – Eliminate the need to invest in bringing both sites up to parity, enabling you to modernize your data centers with the full SDDC/VMware Cloud Foundation™ stack, managed service or infrastructure as a service (IaaS).

Migrate non-vSphere workloads – Migrate KVM and Hyper-V workloads to current vSphere versions compatible with full VMware Cloud™, VMware Cloud Foundation, VMware Cloud Provider™ Program and IaaS offerings.

Seamlessly extend your network and IP space – Extensively reduce complexity and ensure your IP addressing policies, security policies and administrative boundaries are not broken.

Combine on and off-premises networks into a single organizational network – Isolate individual workloads on that network via software-defined firewalling, ensuring there are no security gaps.

Migration types

VMs can be moved to and from data centers enabled with VMware HCX using multiple migration technologies.

VMware HCX Bulk Migration

This method uses vSphere Replication™ protocols to move VMs to a remote site:

- The bulk migration option moves VMs in parallel.
- This migration type can be set to complete on a pre-defined schedule.
- The VM runs at the source site until the failover begins. The service interruption with bulk migration is equivalent to a reboot.

1. Gartner, Inc. "Predicts 2017: Infrastructure Services Become Hybrid Infrastructure Services." David Groombridge, Mark Ray, Daniel Barros, William Maurer, DD Mishra. November 18, 2016.

RESOURCES

Read an overview on VMware HCX

Take the HCX Hands-on Lab

Visit the VMware HCX product page

Watch informative demos, overview videos and more

Read our latest HCX blogs

Follow @VMwareHCX on Twitter and give us a shout with #VMwareHCX

Read VMware HCX documentation

Read our Enterprise Guide to Migrating to the Cloud

VMware HCX vMotion

This method uses the vSphere vMotion® protocol to move a VM to a remote site:

- The vMotion migration option moves one VM at a time.
- The VM state is migrated. There is no service interruption during a VMware HCX vMotion migration.

VMware HCX Cold Migration

This method uses the VMware NFC protocol. It is automatically selected when the source VM is powered off.

VMware HCX Replication-Assisted vMotion

This method combines advantages from the VMware HCX Bulk Migration (parallel operations, resiliency and scheduling) and the VMware HCX vMotion (zero-downtime VM state migration):

- The migration begins with the replication of the VM's disks. As with bulk migration, VMs can be migrated in parallel, and the switchover is configurable on a schedule.
- During the switchover, vMotion is engaged for migrating the disk delta data and VM state.

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