



CloudHub 2.0 for CloudHub 1.0 Users



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Overview

CloudHub 2.0 is a fully managed, containerized integration platform as a service (iPaaS) where you can deploy APIs and integrations as lightweight containers in the cloud.

What are Containers?

Containers are lightweight packages of your application code together with dependencies such as specific versions of programming language runtimes and libraries required to run your software services.

Containers make it easy to share CPU, memory, storage, and network resources at the operating systems level and offer a logical packaging mechanism in which applications can be abstracted from the environment in which they actually run.

How are Containers different from VMs?

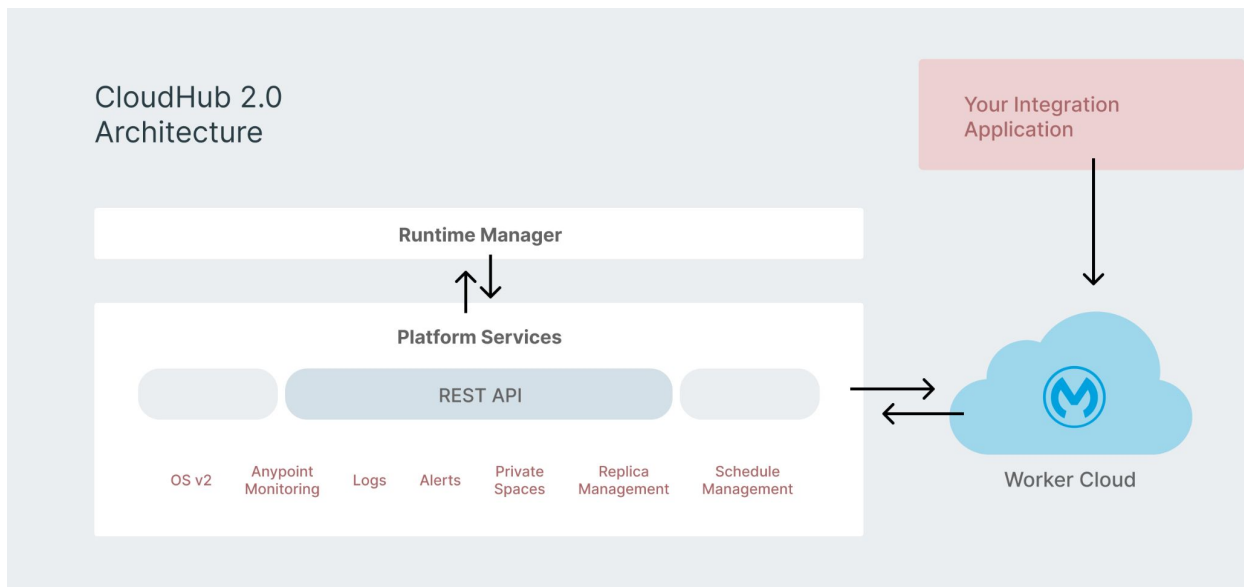
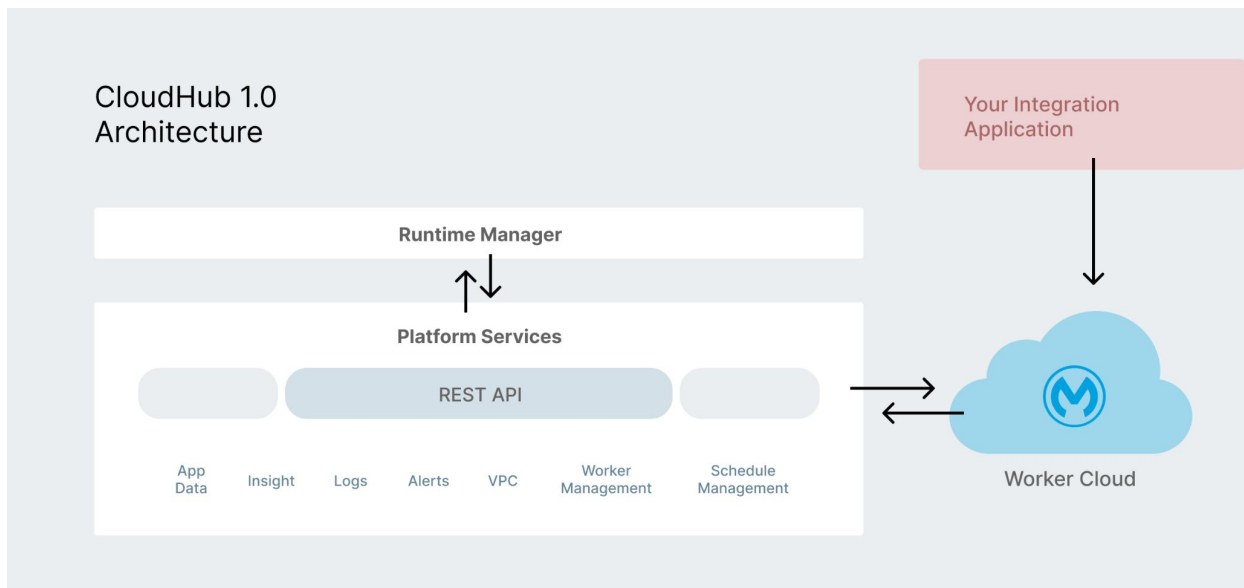
We might have already been familiar with VMs. They are a guest operating system such as Linux or Windows runs on top of a host operating system with access to the underlying hardware. Containers are often compared to virtual machines (VMs). Like virtual machines, containers allow you to package your application together with libraries and other dependencies, providing isolated environments for running your software services.

However the containers offer a far more lightweight unit for developers and IT Ops teams to work with, carrying a myriad of benefits.

- Containers are much more lightweight than VMs
- Containers virtualize at the OS level while VMs virtualize at the hardware level
- Containers share the OS kernel and use a fraction of the memory VMs require

Why should we deploy our Applications on CloudHub 2.0 ?

- Provides for deployments across 12 regions globally.
 - US East: Ohio, N Virginia
 - US West : California, Oregon
 - Asia Pacific : Tokyo , Singapore, Sydney,
 - Canada : Central
 - EU : Frankfurt, Ireland, London
 - South America : Sao Paulo
- Dynamically scales infrastructure and built-in services up or down to support elastic transaction volumes.
 - Volume size, adjust performance, or change the volume type while the volume is in use. You can continue to use your application while the change takes effect.
- Builds in security policies, protecting your services and sensitive data with encrypted secrets, firewall controls, and restricted shell access.
- Encrypts certificates, passwords, and other sensitive configuration data at rest and in transit within Anypoint Platform.
- Provides a standardized isolation boundary by running each Mule instance and service as a separate container



CloudHub 2.0 is basically a mixture of features from CloudHub 1.0 and Anypoint RTF on Self managed Kubernetes.

What are the features that CloudHub 2.0 has but not in CloudHub 1.0?

- Multiple trust stores (client certificates for mutual TLS)
- Multiple custom endpoints per app (this is partially supported in CloudHub 1.0)
- Load balancer logs
- Ingress logs
- VPC (only for private space)
- VPN (only for private space)
- AWS Transit Gate (only for private space)
- Outbound firewall rules (only for private space)
- Static IP addresses (only for private space)
- Mule clustering

What are the features that CloudHub 2.0 doesn't support when compared to CloudHub 1.0?

- Persistent
- VM Queues
- TLS 1.0
- Direct Connect
- VPC Peering
- DataGraph
- Built-in notifications
- Custom notifications (CloudHub Connector)

What is Ingress?

Ingress exposes HTTP and HTTPS routes from outside the cluster to services within the cluster. Traffic routing is controlled by rules defined on the Ingress resource. An Ingress may be configured to give Services externally-reachable URLs, load balance traffic, terminate SSL / TLS, and offer name-based virtual hosting.

What is Clustering?

Clustering provides scalability, workload distribution, and added reliability to your applications on CloudHub 2.0. This functionality is powered by CloudHub's scalable load-balancing service and replica scale-out.

Note: Clustering requires:

- A Platinum or Titanium subscription to Anypoint Platform.
- A CloudHub Enterprise or Partner account type that enables you to use this feature.
- Familiarity with deploying applications using Runtime Manager.
- Need at least 2 MuleSoft instances . Which means your application needs to be deployed in at least 2 replicas.

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CloudHub 2.0 improvements make management easy when compared to CloudHub 1.0. Below are the benefits of CloudHub 2.0:

- Outbound firewall rule configuration.
- Ingress self-service logs .
- More granular vCore allocation options.
- Amazon Web Services (AWS) service roles for resource access control.
- Deploying applications to shared spaces, which do not require advanced setup or infrastructure maintenance.
- You can enable clustering features on a per-application basis using the Anypoint Runtime Manager console when either deploying a new application or deploying an existing application.
- Clustering enables multiple replicas to communicate with each other and share data because they share memory. High availability refers to having multiple replicas that, unlike clustering, do not share data between each replica.
- With added vCore offerings in CloudHub 2.0 (eg: In CH1 , 0.1 vCore ~ 500MB memory where as in CH2 0.1vCore ~ 1GB memory) ,we may no longer need to bundle multiple listeners in the same application to reduce the usage.
- In CloudHub 2.0 , private spaces works similar but as an improved version of VPCs from CloudHub 1.0. We can automatically .
- We can automatically assign a private network for applications in private space. We can also configure a private ingress load balancer that auto scales to accommodate traffic.
- In CloudHub 2.0 , you have public and private endpoints by default and you can configure multiple public endpoints and can access them in Runtime Manager.
- You have an option in CH2 ingress tab to make changes or updates to the TLS context and truststore.

Cloudhub 1.0

Deploy Application

Application Name:

Deployment Target: **CloudHub** (selected)

Application File: No file has been loaded

Runtime: 4.4.0 | Properties: Worker size | Insight

Worker size options:

- 0.1 vCores (500 MB memory) - **Selected**
- 0.1 vCores (1 GB memory)
- 0.2 vCores (1 GB memory)
- 1 vCore (1.5 GB memory)
- 2 vCores (3.5 GB memory)
- 4 vCores

Region: US East (Ohio)

Options:

- Automatically restart application when not responding
- Persistent queues | Encrypt persistent queues
- Use Object Store v2

Cloudhub 2.0

Deploy Application

Application Name:

Deployment Target: **Shared Space US East (Ohio)** (selected) | **CloudHub 2.0** (selected)

This is a public deployment target.

Worker size options:

- 0.1 vCores (1GB Memory)** - **Selected**
- 0.2 vCores (2GB Memory)
- 0.5 vCores (2.6GB Memory)
- 1 vCores (4GB Memory)
- 1.5 vCores (6GB Memory)
- 2 vCores (8GB Memory)

Replica Count:

- In CloudHub 2.0 , the application names must be unique per private space. where in we have unique name per control plane in CloudHub 1.0
- One of the amazing features in CloudHub 2.0 is you no longer need to contact support to enable/disable streaming logs, it comes by default. We can also disable this feature from Runtime Manager.
- Using ports 80 and 443, applications inside a private space can communicate using internal load balancer via the private endpoint. Note that this depends on application protocol.

How CloudHub 2.0 Infrastructure is Different from CloudHub 1.0?

- There is no VPC peering and direct connect in CloudHub 2.0. We can now use transit gateway attachments. In any case, if we delete a private space that has an attached transit gateway, the transit gateway is preserved, and you can reattach it to a different private space.
- To move applications between regions, you must redeploy the application to another shared space or private space in a different region. You cannot move the app to a different region once deployed.
- HTTP and HTTPS traffic uses port 8081.

Application Considerations

- Only Mule 4.3.0 and above versions are supported in CloudHub 2.0
- Application bursting depends on the resource usage of other applications that are deployed in the private space and is not guaranteed.
- Secure application properties are stored in encrypted, private vaults and cannot be viewed directly by users or MuleSoft staff. You can overwrite the properties to new values at any time.

- Only HTTP and HTTPS inbound protocols are allowed. Inbound protocols that are not HTTP are not allowed.
- Persistent Queues are NOT supported. We need to use Anypoint MQ for persistent queues or any queue management.
- Private endpoints do not offer mTLS capabilities
- In Anypoint Monitoring , we must setup alerts for apps individually . We cannot set alerts for all apps simultaneously .

What CloudHub 2.0 does not support?

- Mule versions prior to 4.3.0
- Overwriting JVM parameters
- Overriding default JVM truststores with custom truststores
- Creating custom notifications
- Using the CloudHub Connector

Things to keep in mind before Migrating to CloudHub 2.0 from CloudHub 1.0:

- CH2.0 supports only 4.3.0 and above runtime only.
- You can specify timezone in schedulers unlike we have only UTC in CH1.0.
- Mule maven plugin has to be greater than 3.7.1 or above. If at all you see the CH1.0 apps with lesser version, we need to update them.
- There are no tools or automatic migration from CH1.0 to CH2.0.
- If your CH1.0 applications are using persistent queues, then they need to replace them with Anypoint MQ or any other broker MQs that support this feature.
- Custom Notifications are no longer supported.



Reach us at:

+1 972 370 3073

info@caeliusconsulting.com

US

8501 Wade Blvd. Suite 250.
Frisco, TX 75034

Canada

6-2557 Dougall Avenue,
Suite 200, Windsor, ON
N8X 1T5

Singapore

Fifth Avenue, #03-08,
Guthrie House, Singapore -
268802

India

627 - A., Bestech Business
Towers, Sector-66,
Chandigarh - 160066

www.caeliusconsulting.com

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