WELCOME ATTENDEES!

Apache CloudStack:

India User Group

Hyderabad 2024

Q-Hub 5th floor, Road No 36 & 37,
Jubilee Hills, Telangana 500033

February 23rd, 2024, 10AM-6PM IST

apachecloudstack
open source cloud computing

cloud STACK

INDIA USER GROUP MEETUP

CLOUDSTACK 101

THE BEST WAY TO BUILD YOUR PRIVATE CLOUD

ROHIT YADAV

FEBRUARY 23, 2024 | HYDERABAD, INDIA

ROHIT YADAV

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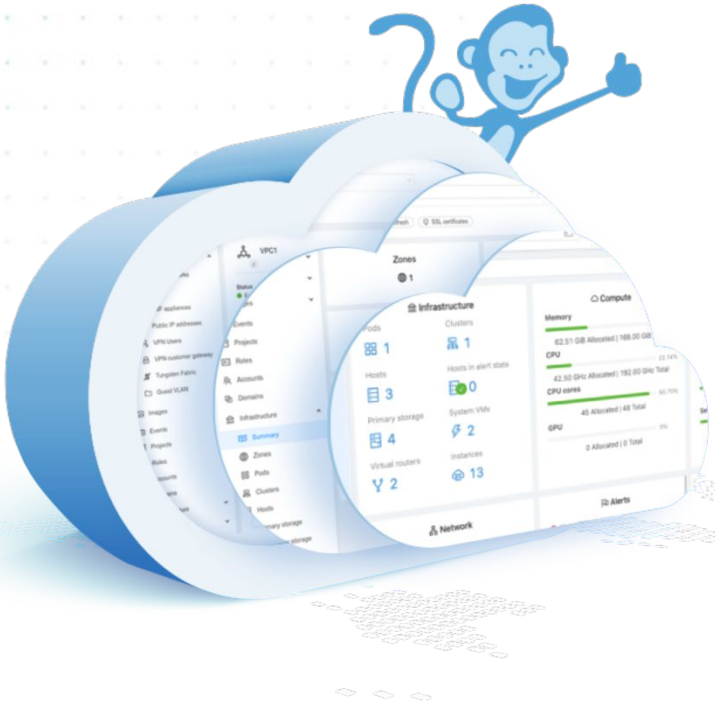
Apache CloudStack Committer, PMC Member & VP
Chair, CloudStack India User Group
VP Engineering ShapeBlue

What is apachecloudstack ?

open source cloud computing

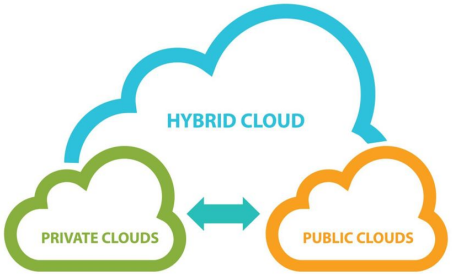


Apache CloudStack™ is an **scalable**, **multi-tenant, open-source**, **hypervisor-agnostic** cloud orchestration platform for delivering Infrastructure as-a Service (IaaS) clouds

What are apachecloudstack use-cases?

open source cloud computing

Private Cloud



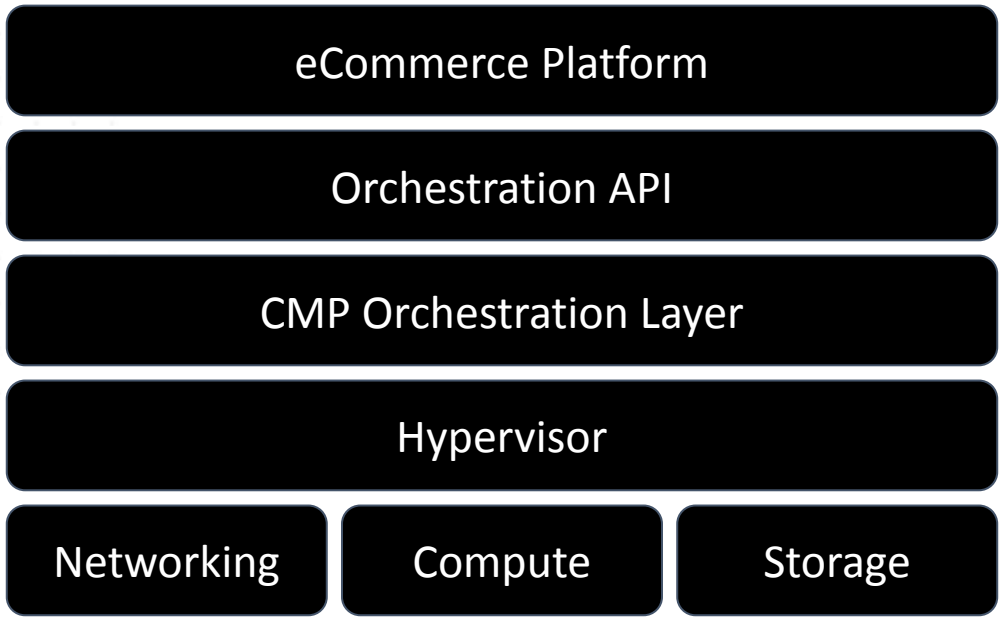
Hybrid Cloud

Public Cloud

Edge Cloud

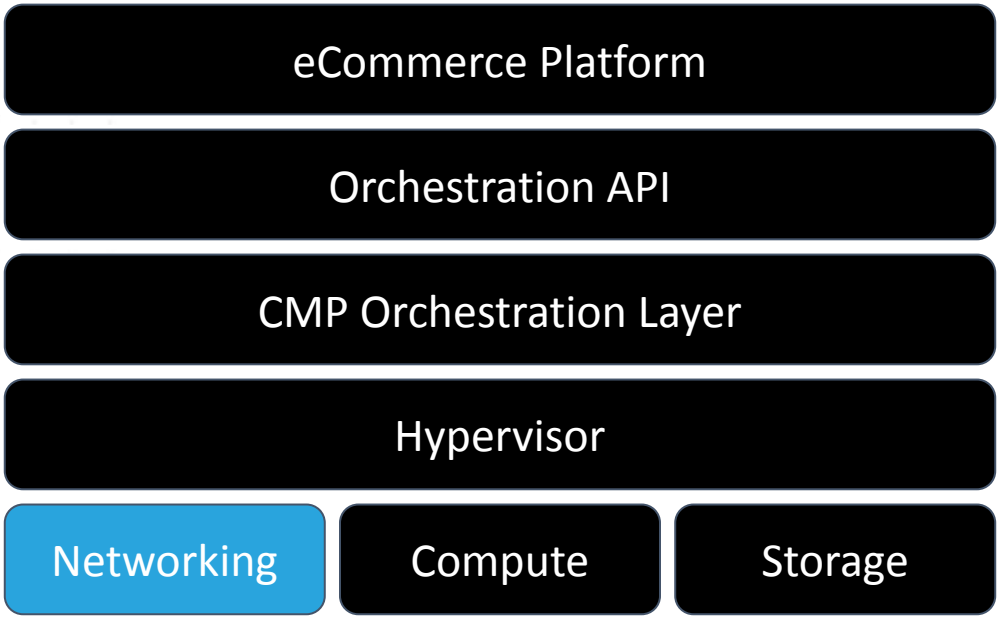
What apachecloudstack™ does?

open source cloud computing



What apachecloudstack™ does?

open source cloud computing



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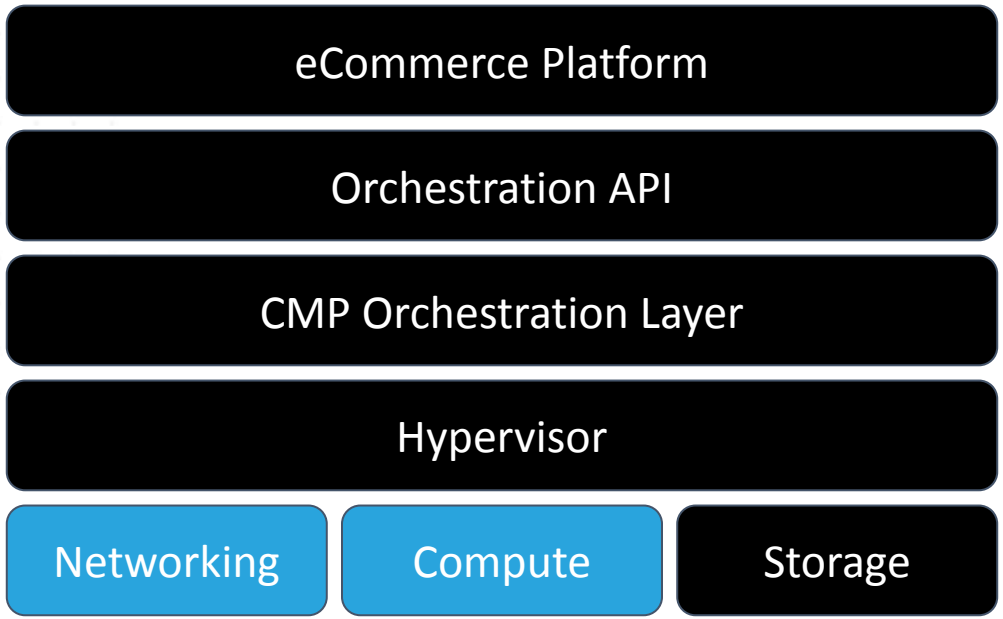

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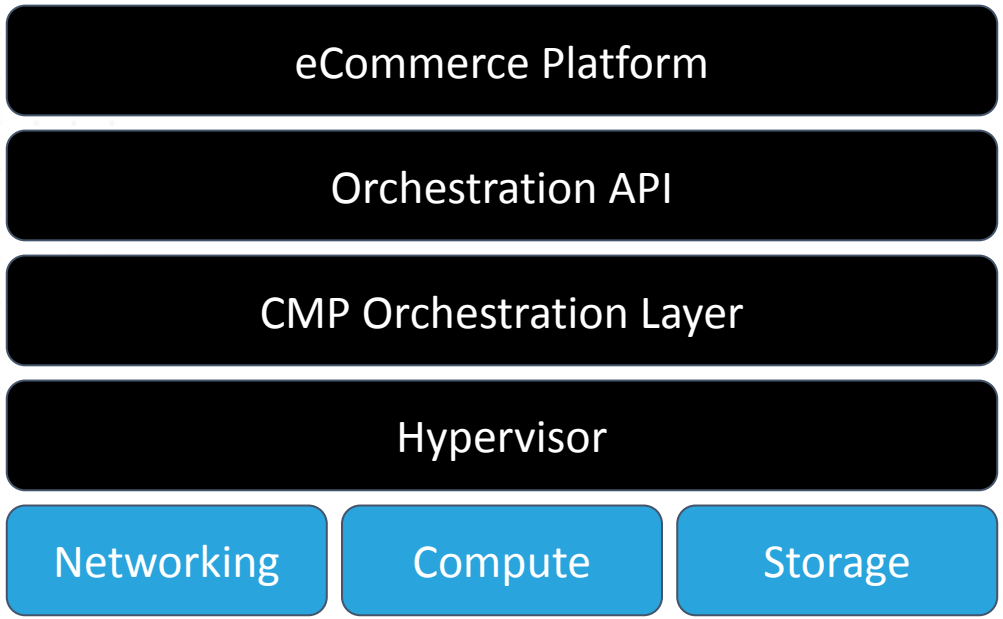

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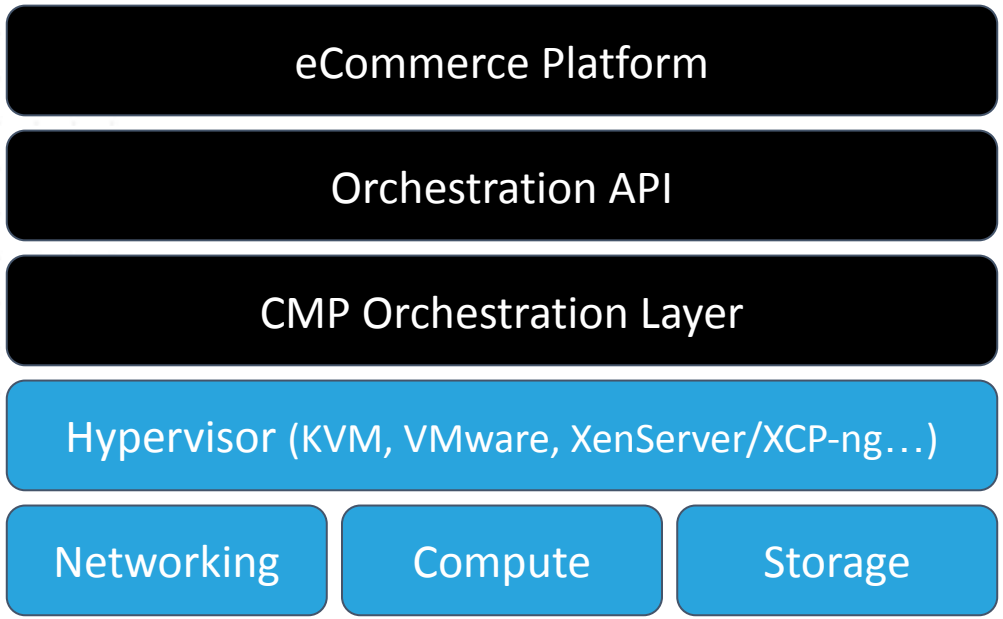

What apachecloudstack™ does?

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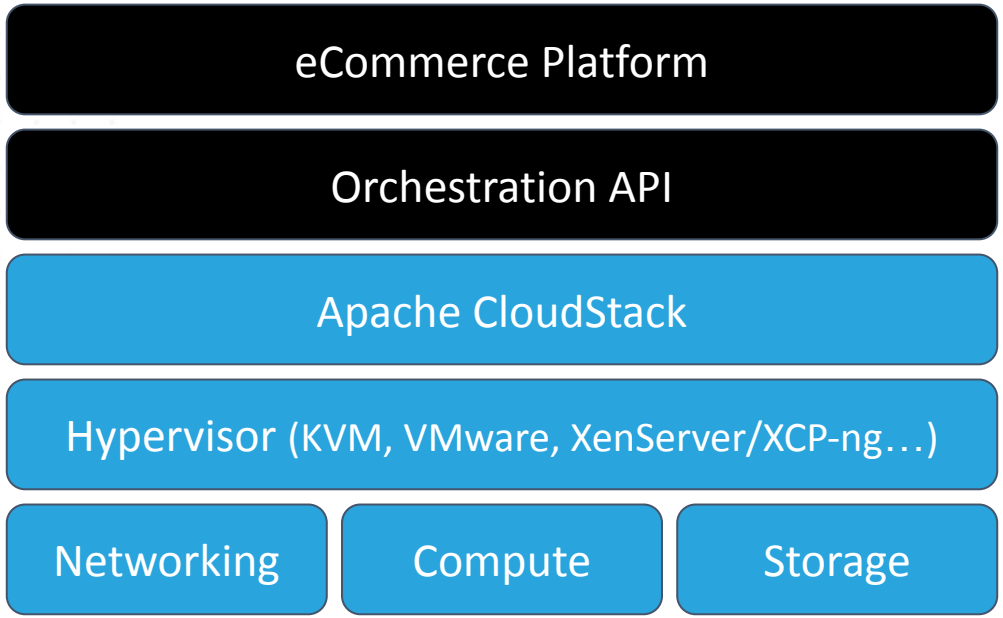
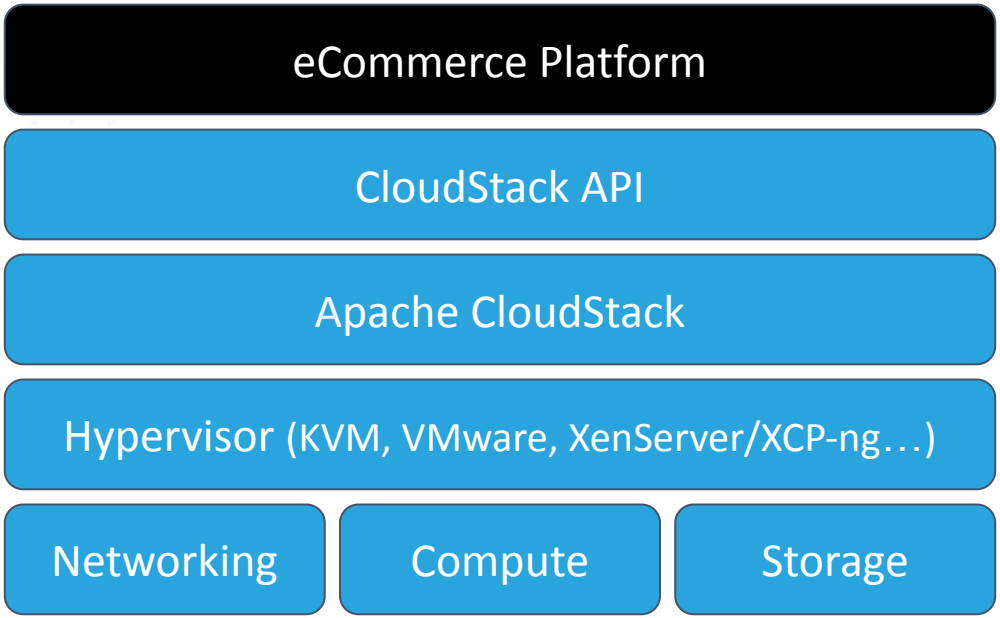


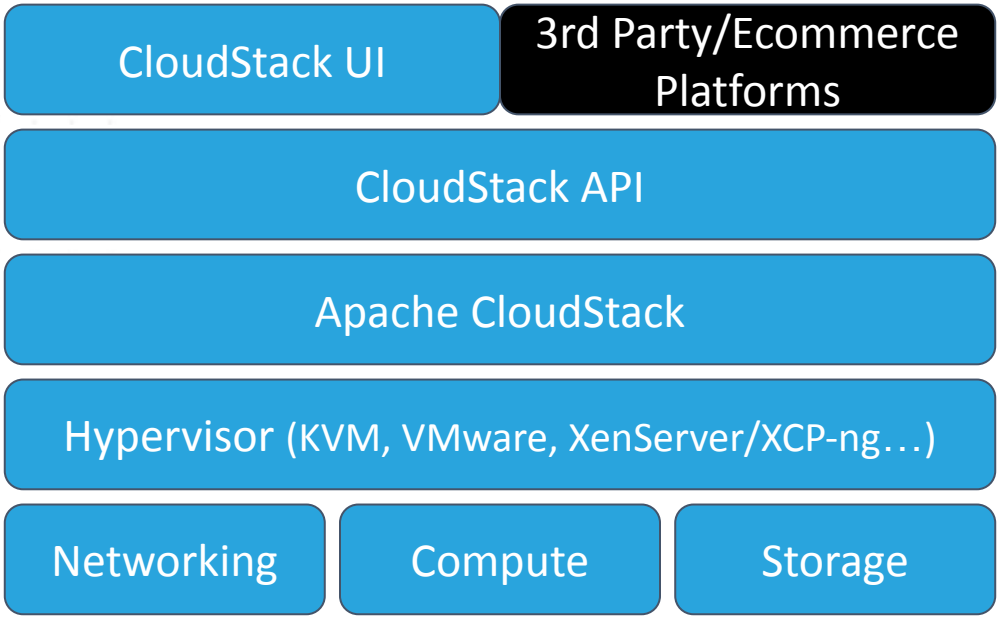
What apachecloudstack™ does?

open source cloud computing



What apachecloudstack™ does?

open source cloud computing



What apachecloudstack™ does?

open source cloud computing

Kubernetes Service

CloudStack UI

3rd Party/Ecommerce Platforms

CloudMonkey CLI

CloudStack API

Apache CloudStack

Hypervisor (KVM, VMware, XenServer/XCP-ng…)

Networking

Compute

Storage

What apachecloudstack™ does?

open source cloud computing

Kubernetes CAPC / EKS-A

Dev Tools (Terraform, Ansible, Automation…)

Multi-Cloud Management

Kubernetes Service

CloudStack UI

3rd Party/Ecommerce Platforms

CloudMonkey CLI

CloudStack API

Apache CloudStack

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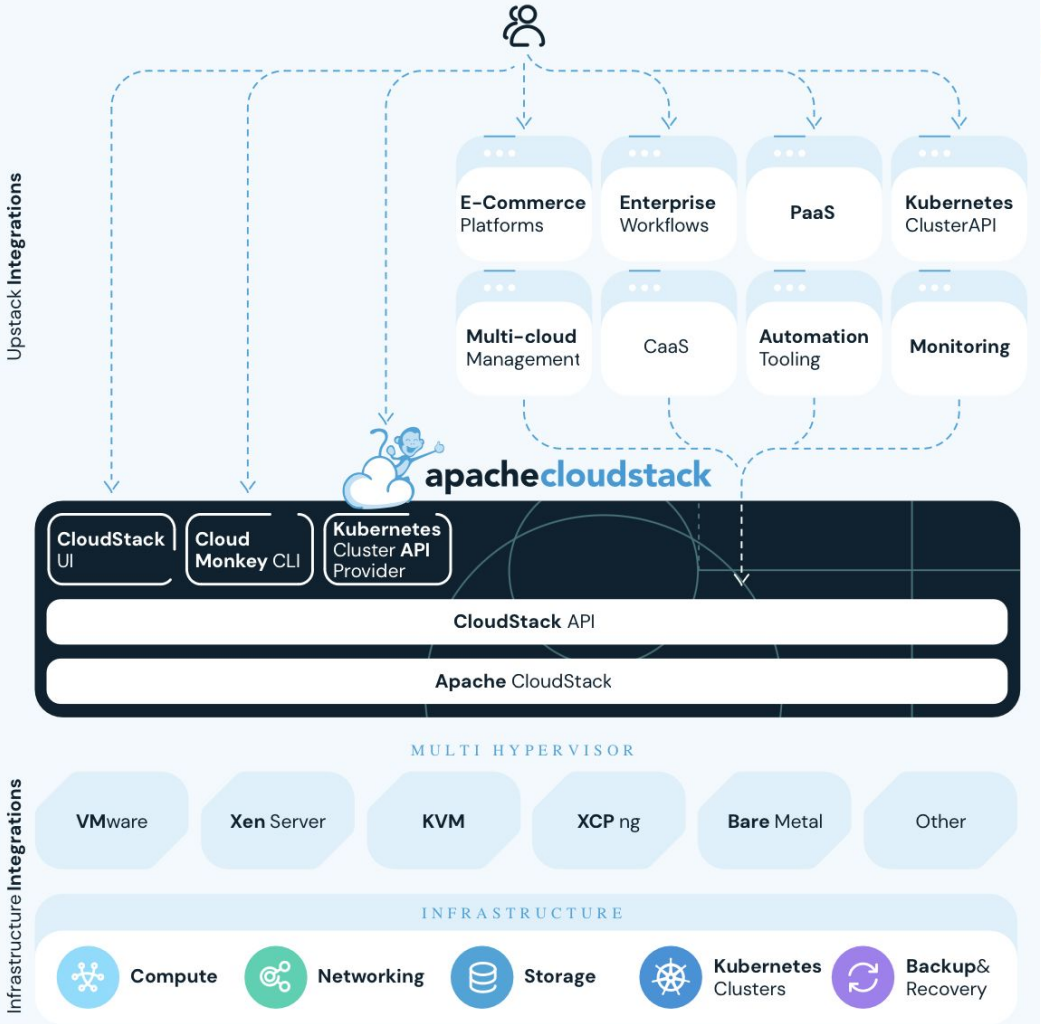
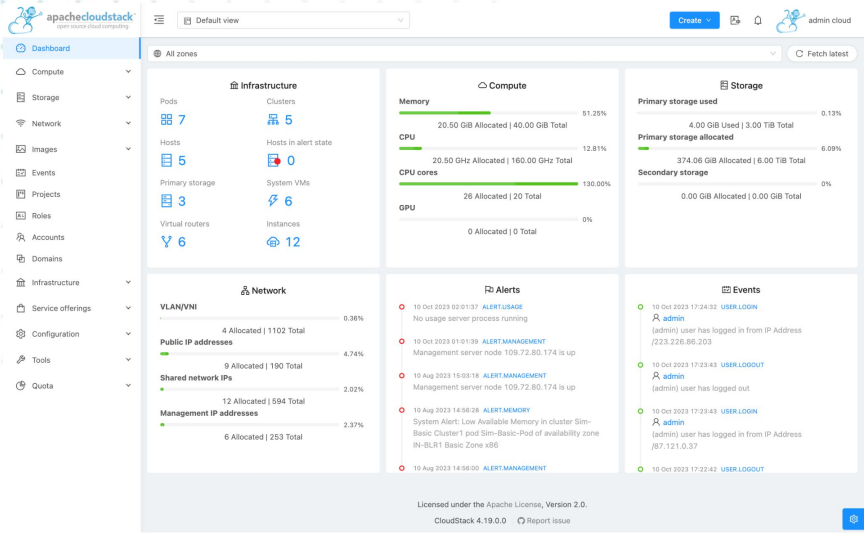

Upstack Integrations
E-Commerce Platforms
Enterprise Workflows
PaaS
Kubernetes ClusterAPI
Multi-cloud Management
CaaS
Automation Tooling
Monitoring
apachecloudstack
CloudStack UI
Cloud Monkey CLI
Kubernetes Cluster API Provider
CloudStack API
Apache CloudStack
MULTI HYPERVISOR
VMware
Xen Server
KVM
XCP ng
Bare Metal
Other
Infrastructure Integrations
INFRASTRUCTURE
Compute
Networking
Storage
Kubernetes Clusters
Backup& Recovery

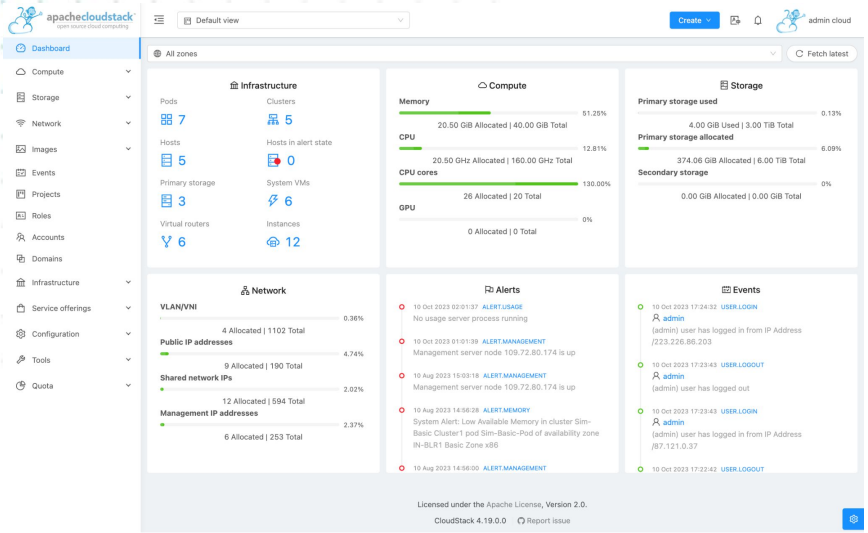
Why apachecloudstack™ ?

open source cloud computing



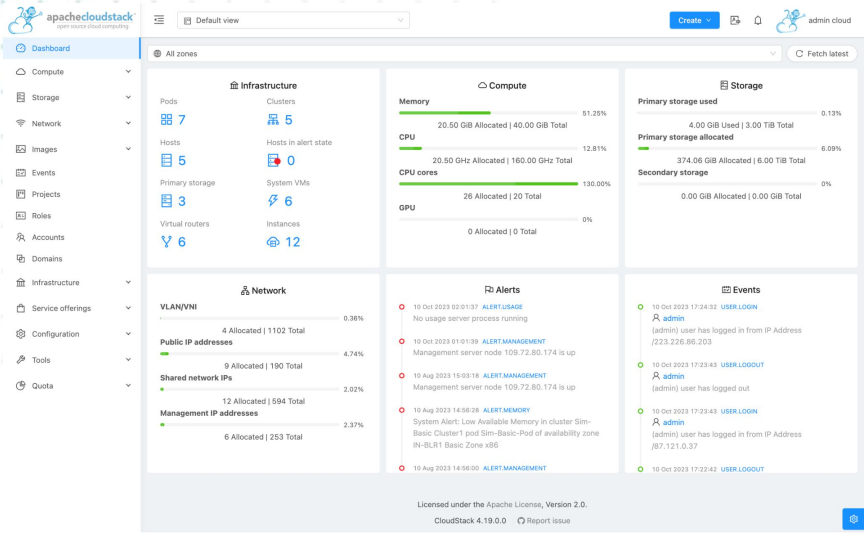
- Turnkey, Integrated end-to-end IaaS product
- Proven at scale, widespread adoption
- Rapid time to value
- Low TCO: Low implementation and operational costs
- Truly multi-tenant
- User-led, community driven, governed by the Apache Software Foundation
- Easy Integration / Narrow Scope
- Free and Open-source, Enabler Technology

apachecloudstack open source cloud computing Advantages



- Broad and Deep hypervisor support: KVM, VMware, XenServer/XCP-ng and others
- Enterprise-grade multi-tenant virtual networking model
- Highly Scalable architecture:
  - Supports thousands of hosts and virtual machine guests
- Highly Available:
  - Automatic failover for virtual machines

apachecloudstack™ open source cloud computing Advantages



- User Self-Service: Web UI, CLI, REST-based API
- Support for Kubernetes Clusters with CKS & CAPC/EKS-A: Seamless container-as-a service offering in IaaS environment
- Tons of great features!
- Supports Terraform, Ansible and other Developer and automation tools

Who’s Using CloudStack?

Among the Apache CloudStack Users are:

leaseweb
CloudOps
BT
iVedha
Delivering Transformational Excellence
gtt
Pulsant
HUAWEI
ARSAT
NTT DATA
INDIQUS
USP
Your.Online
SAP
HIVELOCITY
M5 INTERNET HOSTING
KDDI
SWISS TXT
Telia
ikoula
QUADRIS
cldin
EWERK
DIMSI
ena

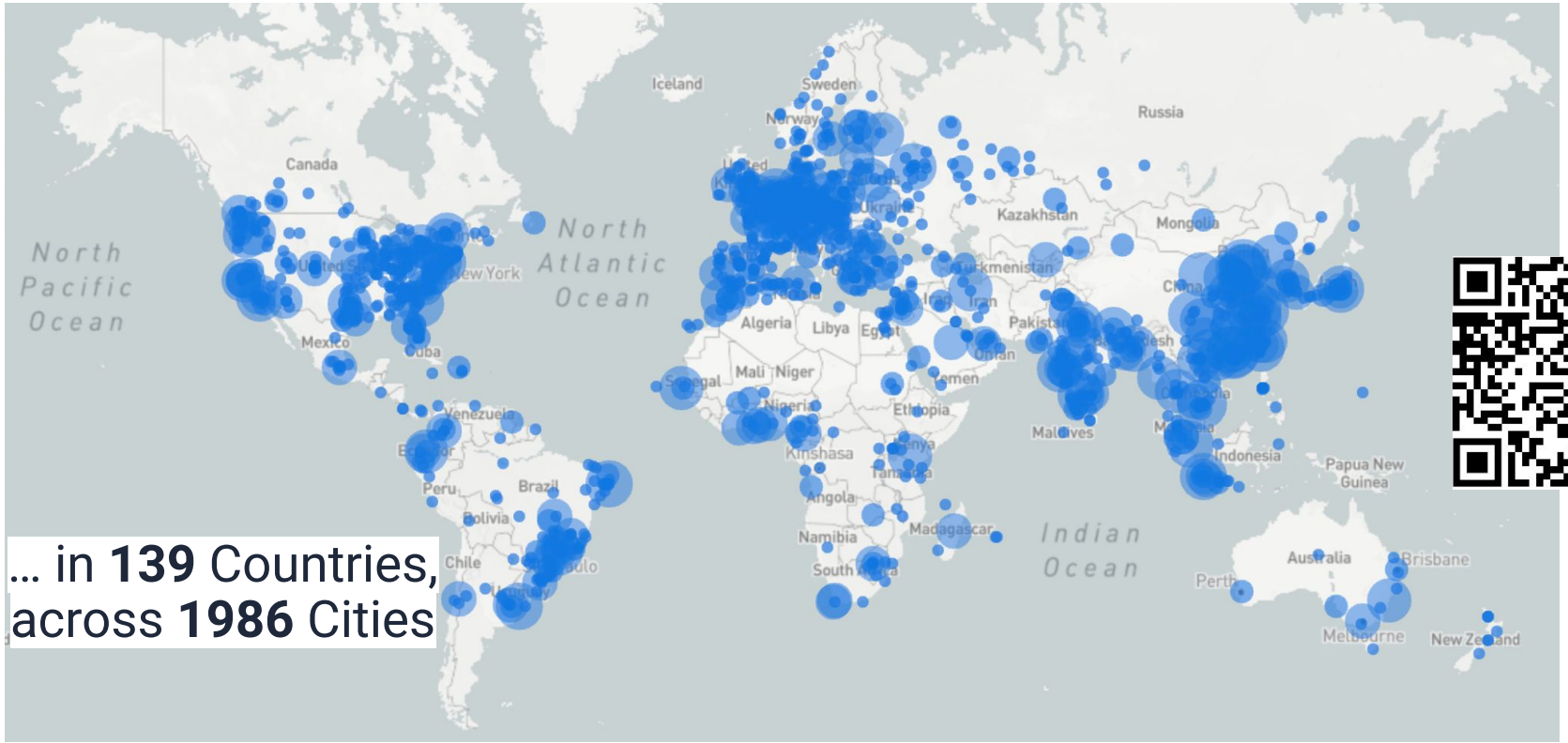
... and many more

Our “Known Users” list shows **225** organisations and companies.

In the **last 12 months**, CloudStack management server packages downloaded **227,780** times from **9037** unique IP addresses.**

**data as of 9th Nov 2023, from download.cloudstack.org and packages.shapeblue.com

CloudStack Users Everywhere



… in **139** Countries, across **1986** Cities

**36 months download stats mapped: https://ipinfo.io/tools/map/94e8a49d-33a8-4f34-8d5d-6c9d19a6a4f8

CloudStack Demo

Run everything using APIs

- List all VMs of a user:
  http://192.168.1.10:8080/client/api?command=listVirtualMachines&listall=true
- Create a new network:
  http://192.168.1.10:8080/client/api/?zoneId=323a3a13-7758-4042-98fc-e165da1b139c&name=test&displayText=test&networkOfferingId=456bd20f-20e5-4fa3-9f10-32d17323753b&command=createNetwork
- Deploy a new instance on the network:
  http://192.168.1.10:8080/client/api/?zoneid=323a3a13-7758-4042-98fc-e165da1b139c&boottype=BIOS&bootmode=LEGACY&dynamicscalingenabled=false&iothreadsenabled=false&templateid=08d5308d-d571-4568-ba21-fde17053c2f9&startvm=true&serviceofferingid=3489ff9a-b8b3-4a32-aa9e-8ac224a3e596&affinitygroupids=&iptonetworklist[0].networkid=b3b4b643-72a4-46c3-856d-07d698b7a289&keypairs=&command=deployVirtualMachine

CloudStack API Docs

https://cloudstack.apache.org/api

apachecloudstack™

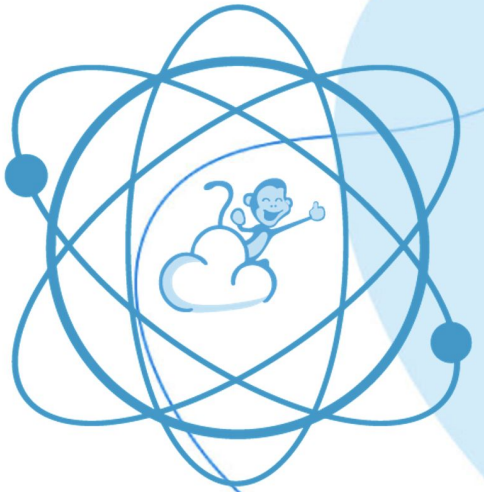
Apache CloudStack 4.19.0.0 Root Admin API Reference

deployVirtualMachine

Creates and automatically starts a virtual machine based on a service offering, disk offering, and template.

Request parameters

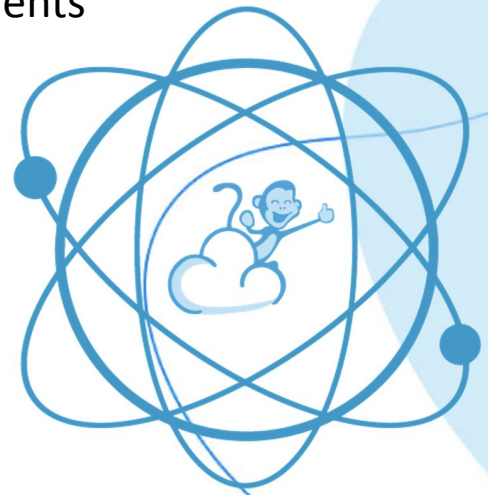
Parameter Name	Description
serviceofferingid	**the ID of the service offering for the virtual machine**
templateid	**the ID of the template for the virtual machine**
zoneid	**availability zone for the virtual machine**
account	*an optional account for the virtual machine. Must be used with domainId.*
affinitygroupids	*comma separated list of affinity groups id that are going to be applied to th Mutually exclusive with affinitygroupnames parameter*



CloudStack APIs Advantage

- Users:
  - Provision scalable infra to other layers (k8s etc)
  - Scripted build/teardown of R&D, test environments
  - Automated deployment of baseline production environments
  - Automated deployment of DR environments
  - CI/CD pipelines

- Enterprise and Operators:
  - Creation of custom multi-tenant user portals
  - BSS / Billing integration



CloudStack CloudMonkey CLI

rohit — cmk — cmk — cmk — 80×24

```
rohit@macair  ~  [19:01:48]
> cmk
Apache CloudStack 🐵 CloudMonkey 6.3.0
Report issues: https://github.com/apache/cloudstack-cloudmonkey/issues

(homecloud) 🐵 > list templates listall=true templatefilter=all
{
  "count": 20,
  "template": [
    {
      "account": "admin",
      "bits": 0,
      "checksum": "0a46a560e51c4525532edf951c45262b55f7c2f6634bbf929b7d9d5299f58
c6890e5fefd326505839973e37a947a78ab7ecc55e30df366c960374bb155b97c26",
      "created": "2023-09-06T00:27:52+0530",
      "crossZones": false,
      "deployasis": false,
      "details": {},
      "directdownload": false,
      "displaytext": "Ubuntu 22.04.3 LTS",
      "domain": "ROOT",
      "domainid": "b13960b9-82fa-11ed-b2b0-525400110090",
```

CloudStack Architecture

Compute

KVM | VMware | XenServer/ XCP-ng | Hyper-V | OVM | Baremetal

Compute

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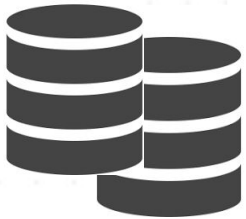
Primary Storage (Compute)



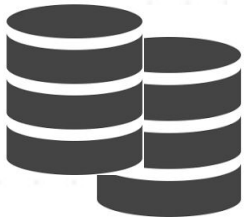
Local Storage | NFS

iSCSI | FiberChannel

Compute

KVM | VMware | XenServer/ XCP-ng | Hyper-V | OVM | Baremetal

Primary Storage (Compute)



Local Storage | NFS | iSCSI | FiberChannel

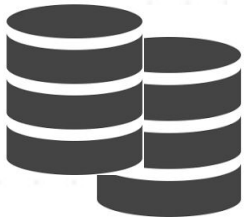
Ceph | NetApp | Dell EMC | Storpool | Linbit | PureStorage | HPE

Managed Storage

Compute

KVM | VMware | XenServer/ XCP-ng | Hyper-V | OVM | Baremetal

Primary Storage (Compute)



Local Storage | NFS

iSCSI | FiberChannel

Ceph | NetApp | Dell EMC | Storpool

Linbit | PureStorage | HPE

Managed Storage

Secondary Storage (User Accessible)

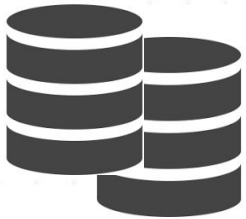
Swift | S3

NFS

Compute

KVM | VMware | XenServer/ XCP-ng | Hyper-V | OVM | Baremetal

Primary Storage (Compute)



Local Storage | NFS | iSCSI | FiberChannel

Ceph | NetApp | Dell EMC | Storpool | Linbit | PureStorage | HPE | Managed Storage

Secondary Storage (User Accessible) Object Storage (User Accessible)

Swift | S3 | NFS

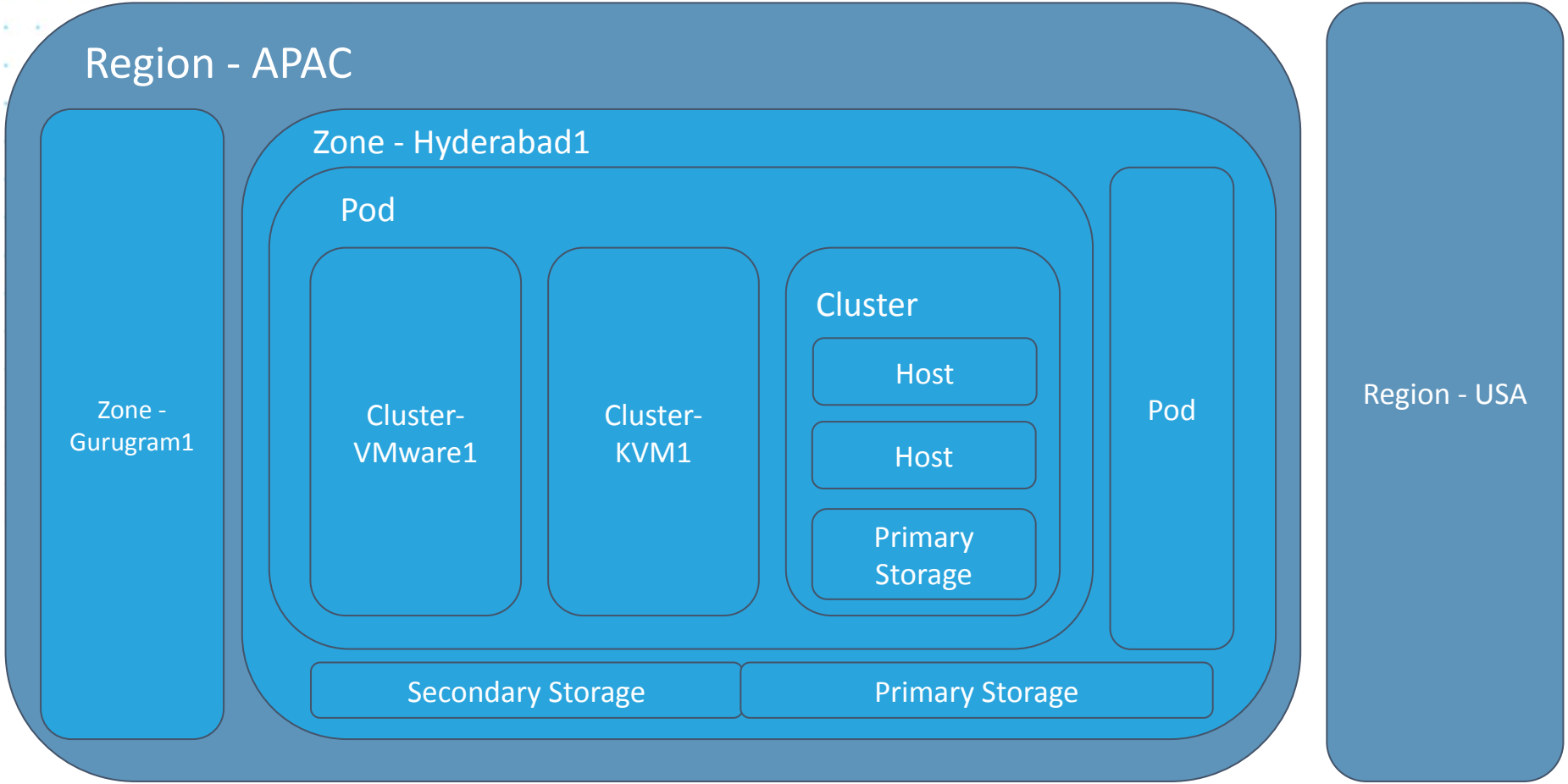
Min.io | Ceph

Networking

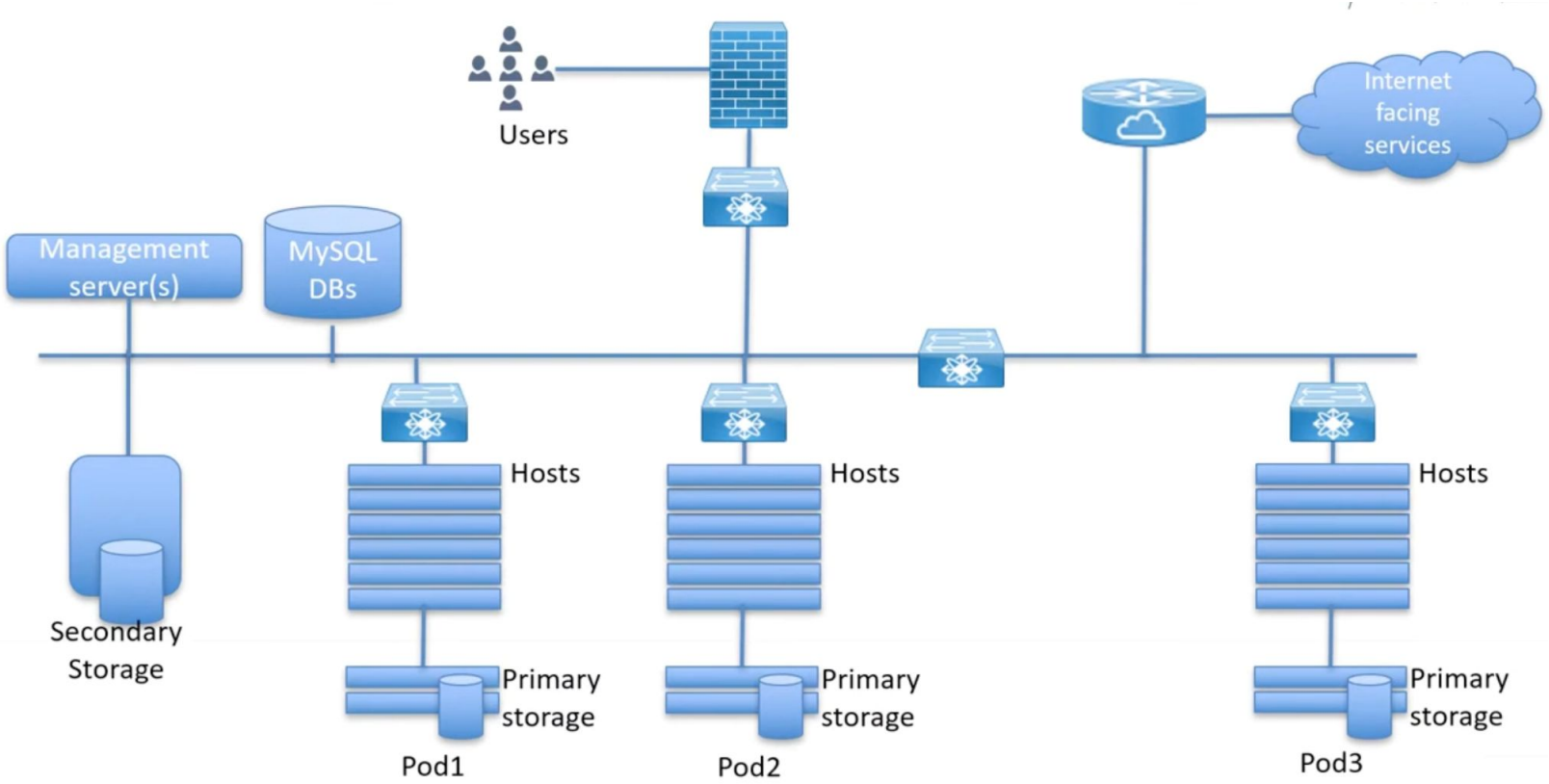
Advanced L2 | VLAN | VXLAN | GRE | …

Basic L3 | Security Groups

Services | Routing | Firewall | DHCP | DNS | LB | VPN | PF | …


Region - APAC
Zone - Gurugram1
Zone - Hyderabad1
Pod
Cluster- VMware1
Cluster- KVM1
Cluster
Host
Host
Primary Storage
Pod
Secondary Storage
Primary Storage
Region - USA

Deployment Model



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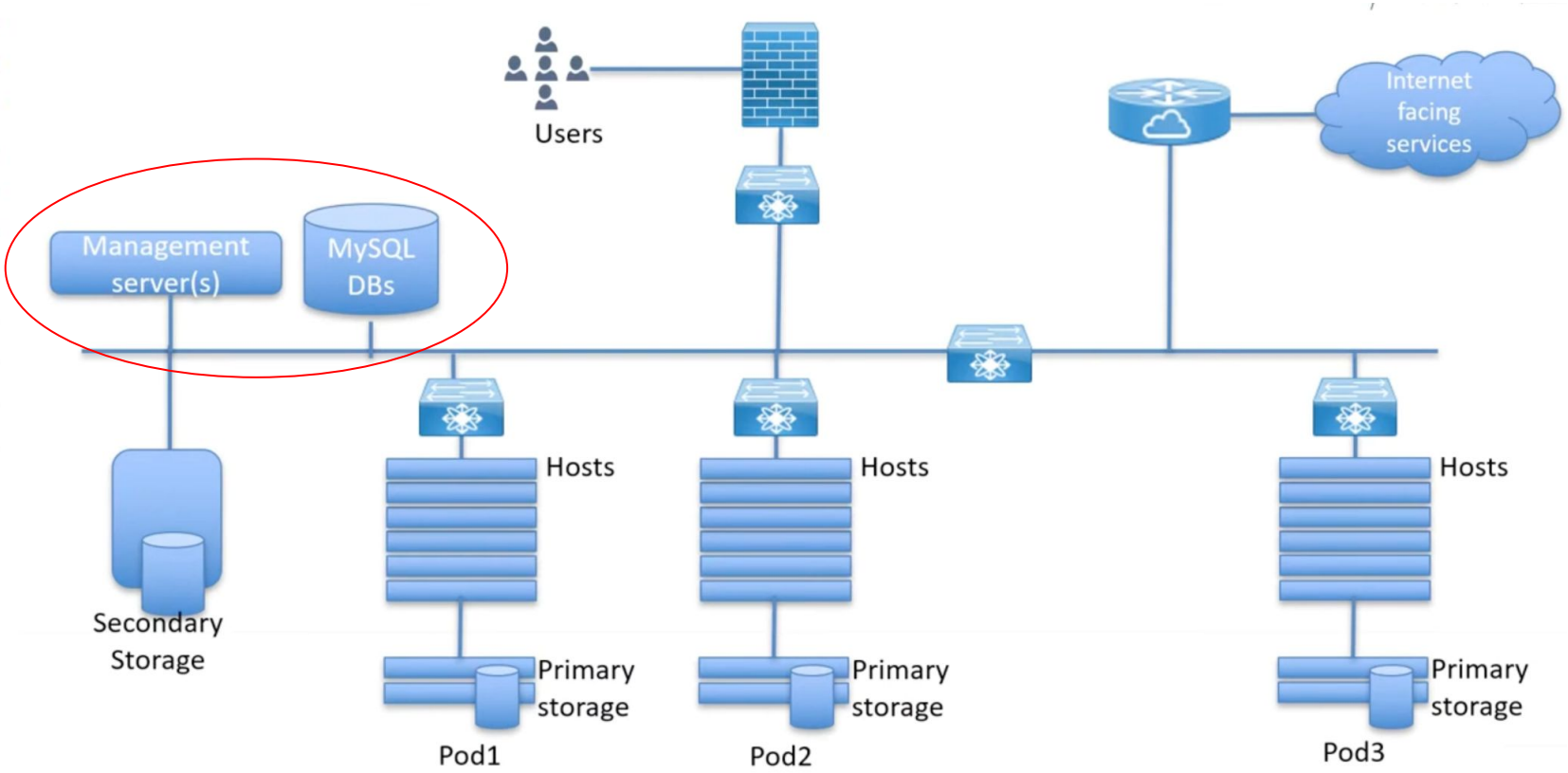


CloudStack Community

CloudStack History

2008

cloud.com

Vmops launches, rebrands as cloud.com, Citrix later acquires it in 2011

2012

Apache CloudStack

Citrix donates CloudStack to the Apache Software Foundation

2013

Top Level Project

CloudStack graduates to become a top level Apache project, majority of committers not from Citrix from 2014 onwards

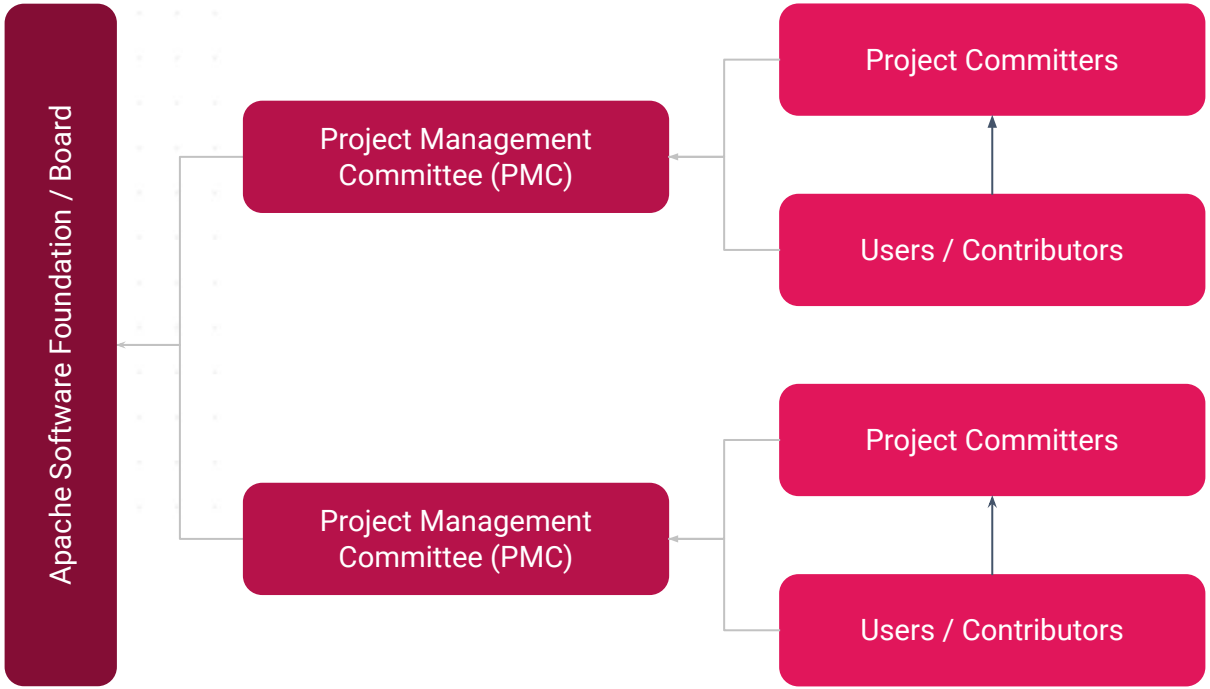
2016-now

Fully Community Driven

Citrix leaves the project, lots of releases, adoption continues to grow

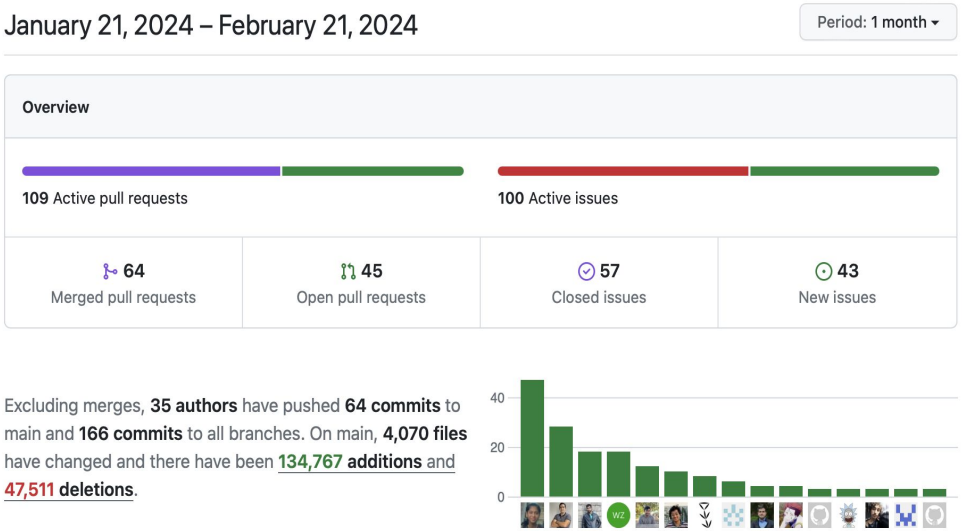
Apache CloudStack

- Developed by the Apache CloudStack Community
- Governed by the Apache Software Foundation
- 2 Releases Per Year
- LTS Releases
- Diverse user-driven community


Apache Software Foundation / Board
Project Management Committee (PMC)
Project Committers
Users / Contributors
Project Management Committee (PMC)
Project Committers
Users / Contributors

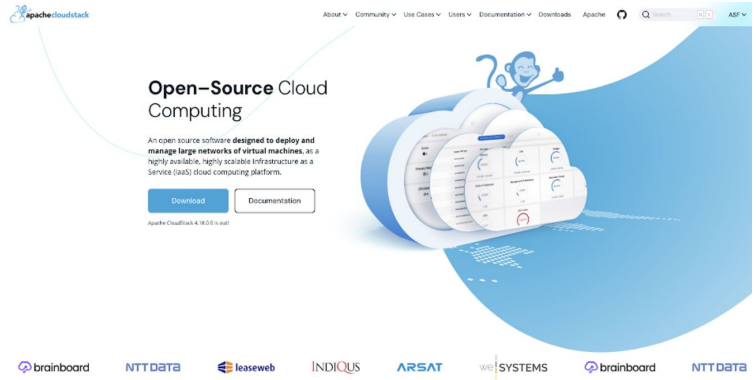
CloudStack Community Today

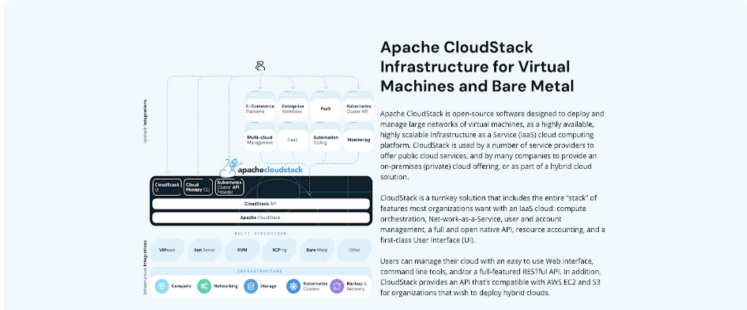
- 135+ Diverse Committers
- 55+ Diverse PMC Members
- Busy Mailing and Github activities
- Thousands of packages downloads
- Last four weeks:
  - 60 merged PRs
  - 45 open PRs
  - 57 closed issues
  - 43 new issues
  - 35 authors
- 2,360+ Unique visitors in last 15 days
- Lots of meetups and events…



Where To Go Next?

- Download from CloudStack Website: https://cloudstack.apache.org
- Try Simulator: https://qa.cloudstack.cloud/simulator/
- Documentation: http://docs.cloudstack.apache.org
- Mailing lists: https://cloudstack.apache.org/mailing-lists
- Events & Meetups: https://cloudstack.apache.org/events https://cloudstackcollab.org





Thank You | Q&A

#CloudStackJustWorks