Alibaba Cloud ZStack Solution

Make IT Easy ， Quick Deployment

Contents

Alibaba Cloud

01 PART

ZStack Overview

Alibaba Cloud ZStack Overview
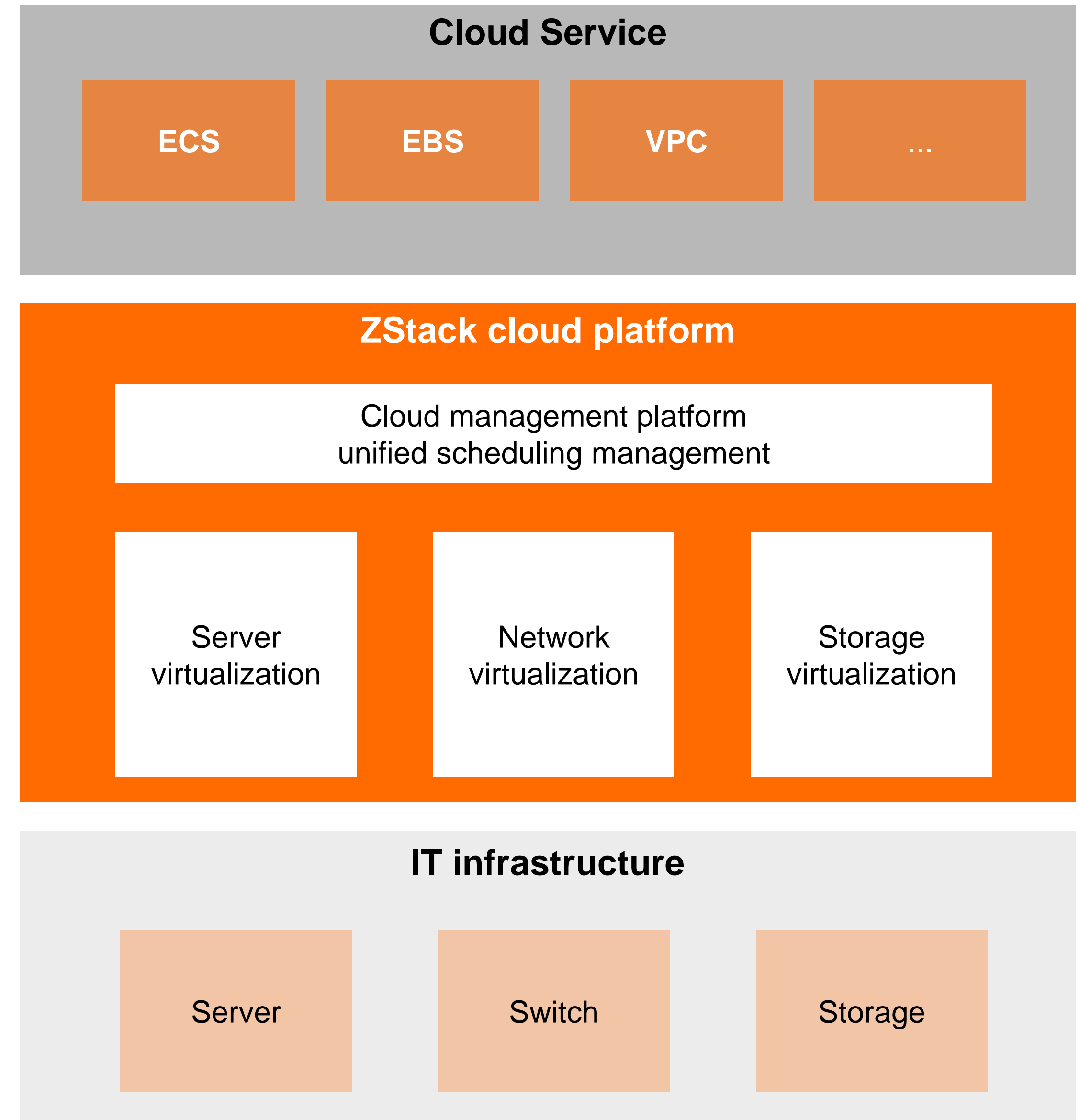
Alibaba Cloud

- Alibaba Cloud ZStack is a light-weight **Infrastructure as a Service (IaaS)** hybrid cloud solution which can be easily deployed to manage hardware in data centers, servers on the edge, and hybrid cloud environments across on-premises and Alibaba Cloud resources.
- Providing computing **virtualization**, network virtualization and distributed storage virtualization in one product (HCI solution).
- Providing **cloud management** capabilities including multi-tenant management, multi-zone management, billing management, backup etc.
- Managing as less as **3 nodes, and as many as 2000+ nodes** and various physical assets (almost all the main stream brands of servers, network switches, storage systems).
- Supporting various **Alibaba Cloud services** (ECS, EBS, VPC, SLB, VPN, IPV6 etc.).
- An **open** hybrid cloud solution which can be easily downloaded online and installed. Offering 1600+ RESTful APIs for third party integration

Cloud Service

| ECS | EBS | VPC | ... |

ZStack cloud platform

Cloud management platform
unified scheduling management

| Server virtualization | Network virtualization | Storage virtualization |

IT infrastructure

| Server | Switch | Storage |

ZStack Is Widely Used In China Market

Alibaba Cloud

Customer Quantity	**1200+**	Maximum Node Scale	**2000+**	Industry Coverage	**100+**

Government
Smart City of Guian
Government Affairs Cloud in Xiangtan
Chaozhou Political-Legal Information Network

Public Security
Third Reasearch Institute of Ministry of Public Security
Fourth Reasearch Institute of Ministry of Public Security
Traffic Police Force in Heilongjiang

Manufacturing
XCMG Group
East Hope Group
Changhong Group

Education
Nanjing University
University of Electronic Science and Technology
Sichuan Information Vocational Technology College

Finance
UnionPay
People's Bank of China
Yanbian Rural Commercial Bank

Internet Industry
Ele.me
DiDi
Tongdun Technology

Healthcare
Everan Hospital
Weixian People's Hospital in Hebei
Tancheng No.1 People's Hospital in Shandong

Other
Jiajiayue Group
Meiya Pico
… …

ZStack Productization and 4S Standards

Alibaba Cloud

Focus on innovation of cloud computing technologies and productization that provides private cloud and seamless hybrid cloud.

As the initiator of the largest independent open-source IaaS community in China, ZStack provides all the products that are self - developed with independent intellectual property rights.
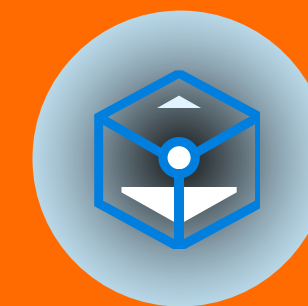
With the design language of Java, ZStack provides perfect RESTful APIs to support various top-level cloud services, such as PaaS and SaaS.

ZStack
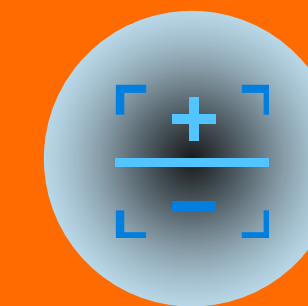
Simple

Scalable

Strong

Smart

S1

Simple
Faster Cloud Adoption and Shorter Service Lead Time

Alibaba Cloud

Easy to Deploy

One-click download

To complete the installation and deployment within 30 minutes.

One host

To be able to set up a POC environment.
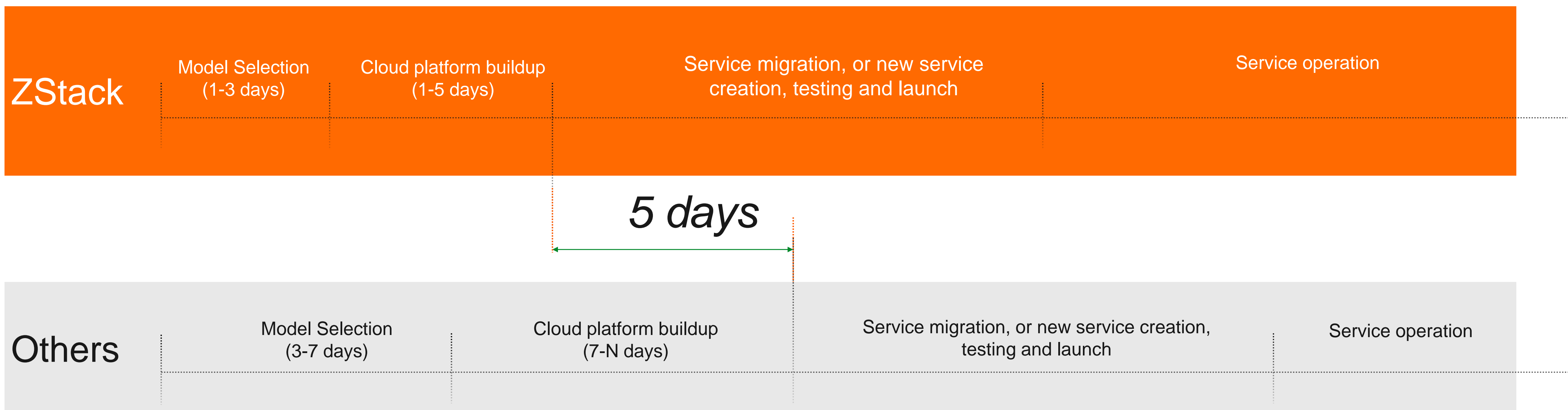
One management node

To be enough to manage the whole cloud platform.

Easy to Maintain

Totally graphic operations for maintenance and management.

To provide operational guidance and other abundant help functions of automatic maintenance.

One maintenance technician (with general abilities) to do maintenance with ease.

ZStack	Model Selection (1-3 days)	Cloud platform buildup (1-5 days)	Service migration, or new service creation, testing and launch	Service operation

5 days

Others	Model Selection (3-7 days)	Cloud platform buildup (7-N days)	Service migration, or new service creation, testing and launch	Service operation

Strong
Supporting Various Top-level Service Scenarios Stably

Alibaba Cloud

To handle customer service scenarios， can be the sole criterion for testing stability.

Service HA

Supporting high-load internet service scenarios for more than 700 days.

Supporting harsh computing scenarios against poor environment.

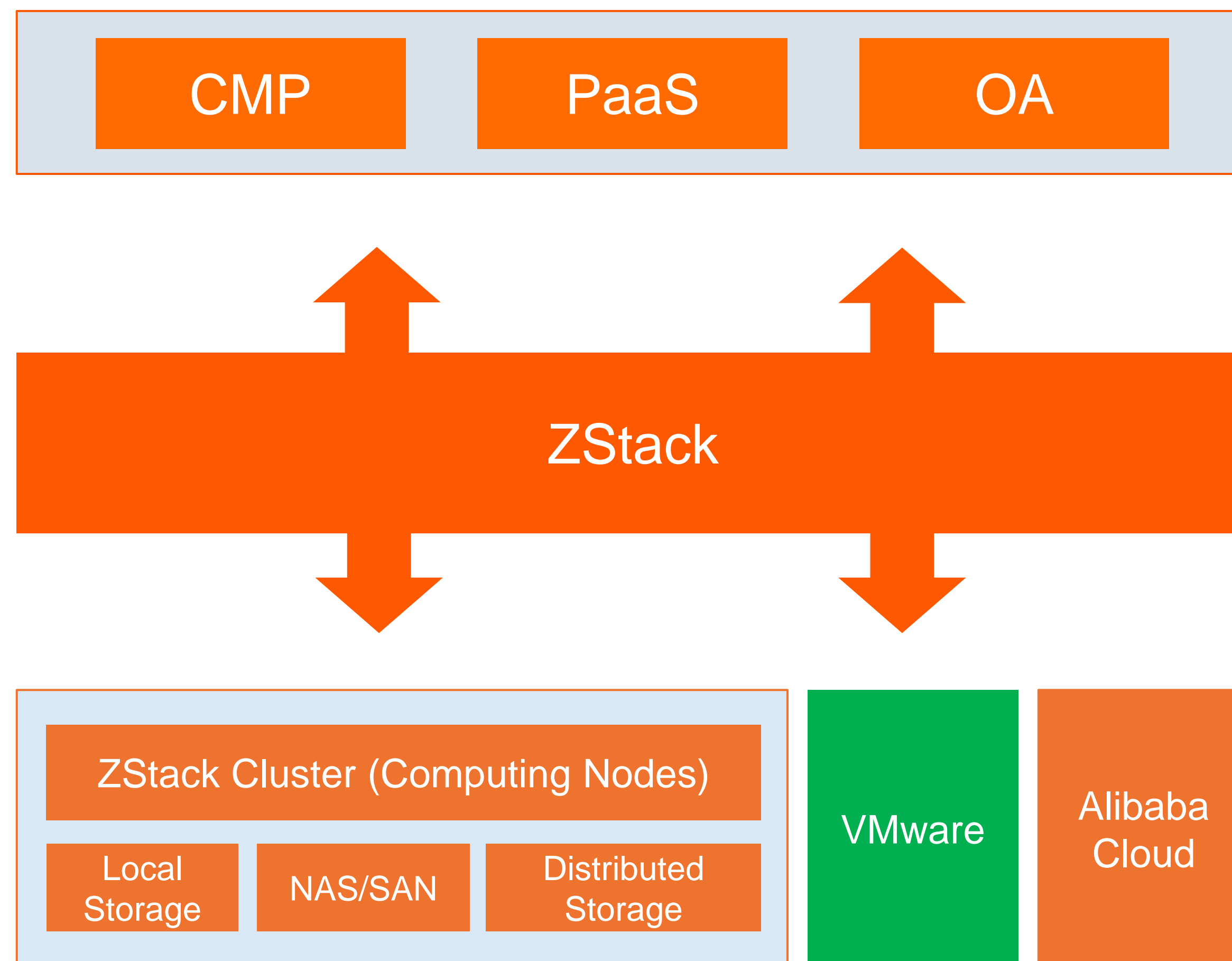**VM HA**

Supporting multiple domestic IDC manufacturers for their cloud infrastructures.

Platform HA

Supporting hundreds of service scenarios in tens of industries.
(High workload、Attack vs Defense Drill、Big Data、Artificial Intelligence)

S3 Scalable
Unified Resource Management & On-demand Delivery

Alibaba Cloud

CMP | PaaS | OA

ZStack

ZStack Cluster (Computing Nodes)

Local Storage | NAS/SAN | Distributed Storage

VMware

Alibaba Cloud

Heterogeneous virtual platform management
Unified management of different virtual platforms. (ZStack, VMware vCenter, Alibaba Cloud)

Resources
On-demand delivery of service resources
Providing load balance, scalability and dynamic scheduling to deliver service resources on demand.
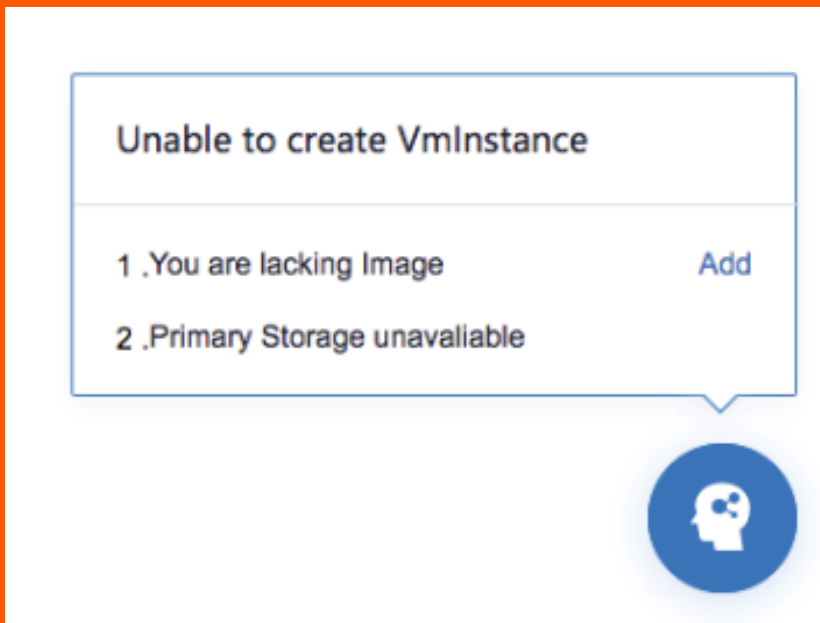
Open cloud platform
Providing standard HTTP RESTful APIs to seamlessly integrate third-party CMPs, PaaS and OA.

Highly-efficient management ratio
High efficiency ratio of management nodes to computing nodes. One management node can manage 10000 computing nodes.
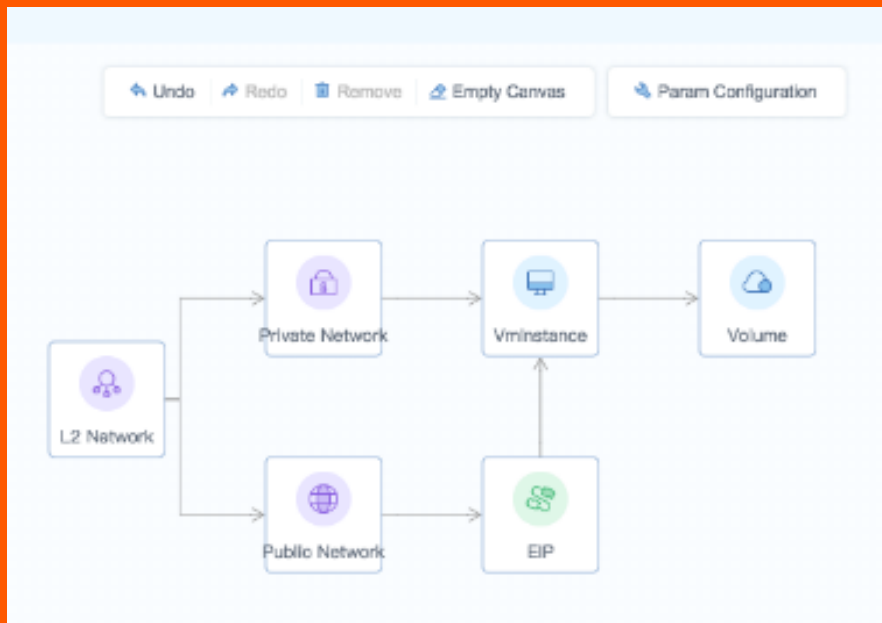
Smart
Easy to Use & Focus Long-term Enterprise IT Demand

Alibaba Cloud

v2.6 and before

Seamless upgrading

v3.9 & 2.6

Seamless upgrading

Latest ver.

3.10 coming

Unable to create VmInstance

1. You are lacking Image   Add

2. Primary Storage unavaliable

↩ Undo   ↪ Redo   🗑 Remove   ✕ Empty Canvas   ⚙ Param Configuration

Private Network

Vminstance

Volume

L2 Network

Public Network

EIP

Elastic Expansion

ZWatch

In Group VM CPU Average Usage Rate> 80%

VM

Elastic Shrinkage

ZWatch

In Group VM CPU Average Usage Rate < 20%

VM

ZStack 2.0

Smart prompts

ZStack 2.5

Resource scheduling
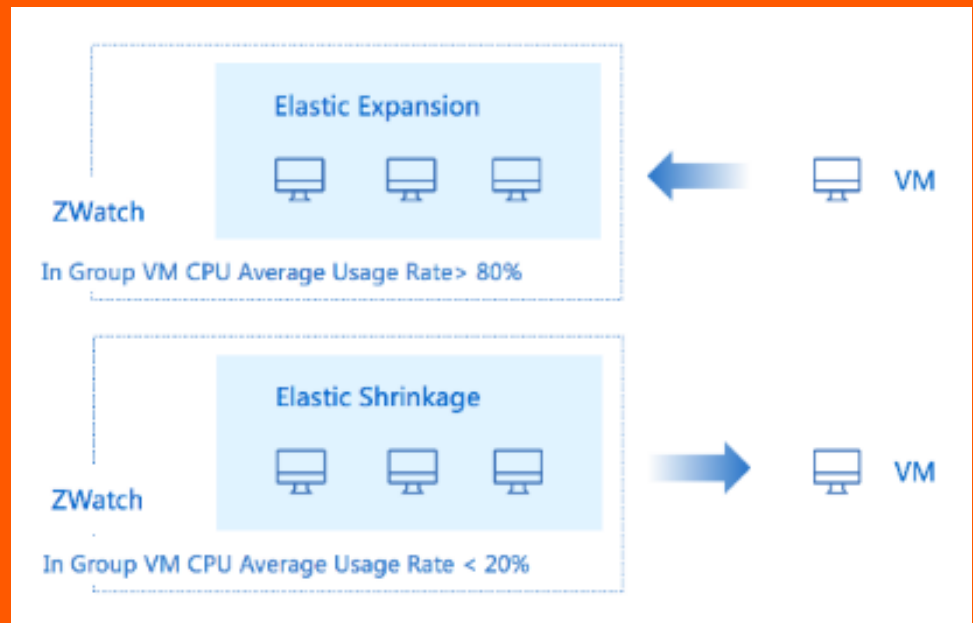
ZStack 3.X

Scalability……

Overview of Function Modules in ZStack

Alibaba Cloud

Cloud Portal service

Web UI	Char UI	Command Lines	OS Interface	HTTP Restful API	Java SDK	Python SDK	3rd Service

Cloud Resource Service

VM Instance	L2 Network	EIP	Security Group	Block Storage	Snapshot	Billing
Volume	L3 Network	Port Forwarding	DHCP	File Storage	Clone	Graphic Monitoring
Nic	vRouter	Load Balance	QOS	Object Storage	Backup	Net Topology

Cloud Platform Management

VM Management (Live Migration, High Availability, Root Volume Resize .... More)

Host Management	Organization Structure	Image Management	VPC Network	ESXi Network	Operations and Statistics	Billing
Cluster Management	Project Management	Offering Management	Flat Network	ESXi VM	ZWatch	Account Management
Zone Management	Enterprise Management	Cloud Resource Pool	Network Resource	vCenter	Resource Scheduling	Platform Management

Infrastructure Supporting

Virtualization / KVM | VMware	Bare-metal	Local Storage	Distributed Storage / ZStack Ceph	Business Storage / SAN | NAS	Aliyun PanGu	SDN/NFV / VLAN | VxLAN |NFV	China Security LEVEL 3 in hierarchical protection

Alibaba Cloud

ECS
Volume
PanGu
Security Group
VPC
EIP
VPN
High Express
SD-WAN

ZStack Product Advantages

Alibaba Cloud

Ease of use

High Efficiency stability

Alibaba Cloud Ecology

Easy Start-up

- **Strong equipment reuse ability （above 4C8G)**
- Simple installation and deployment (within 30 minutes)
- **1 start-up up to 100 nodes***

Easy to use

- Graphical operation
- **Easy O&M**

High efficiency

- Self-developed technology, non-foreign open source cloud project
- Good performance, creating 500 VM instances in **2'41 minutes**
- With the same configuration, the performance of the VM instance is close to the physical machine

Stability

- VM instance failure self-recovery
- Power failure self-recovery, no human intervention

- Seamless hybrid cloud interconnected with Alibaba Cloud public cloud data plane;
- Alibaba PaaS capabilities can deployed offline by ZStack, helping enterprises to transform

02

PART

ZStack Key Points

4 Key Points

Alibaba Cloud

1 Comprehensive cloud solution by one product

- Support multi-zones, multi-tenants, metering&billing management, backup, bare-metal management etc features
- Support software defined storage and network
- VPC for isolated private cloud environment
- Interconnection with Alibaba Cloud data as hybrid cloud solution

2 Great TCO & cost effectiveness

- Save as much as 78% vSphere license cost
- 3 year 7x24 support included in 200 and 1000 CPU suites
- Support almost all main stream servers, network devices and storage (SDS, SAN/NAS)
- Easy operation and maintenance
- Free upgrade without system downtime

3 Strong & on demand enterprise service

- Dedicated account manager to enable quicker responses for business critical environments (TAM)
- 7*24 dedicated Dingtalk groups, ticket system, and email to ensure business continuity
- Remote support for API consulting & deployment
- On demand support for feature & enhancement

4 Open platform for multi-cloud strategy

- Core code is opened as open-source project
- 1600+ RESTful APIs to seamlessly integrate third party CMPs, PaaS, and Alibaba Cloud
- Integrate with Alibaba Cloud HBR and Hybrid Cloud Storage Array to implement cloud backup and DR
- V2V migration tool for future migration

1. Comprehensive Cloud Solution by One Product

Alibaba Cloud

Target Customer
- vSphere/vCenter users who require more cloud capability instead of just virtualization
- Finance, government, education, energy clients who usually own multiple data centers
- Telecom, IDCs, MSPs etc. who usually operate multiple data centers for their clients
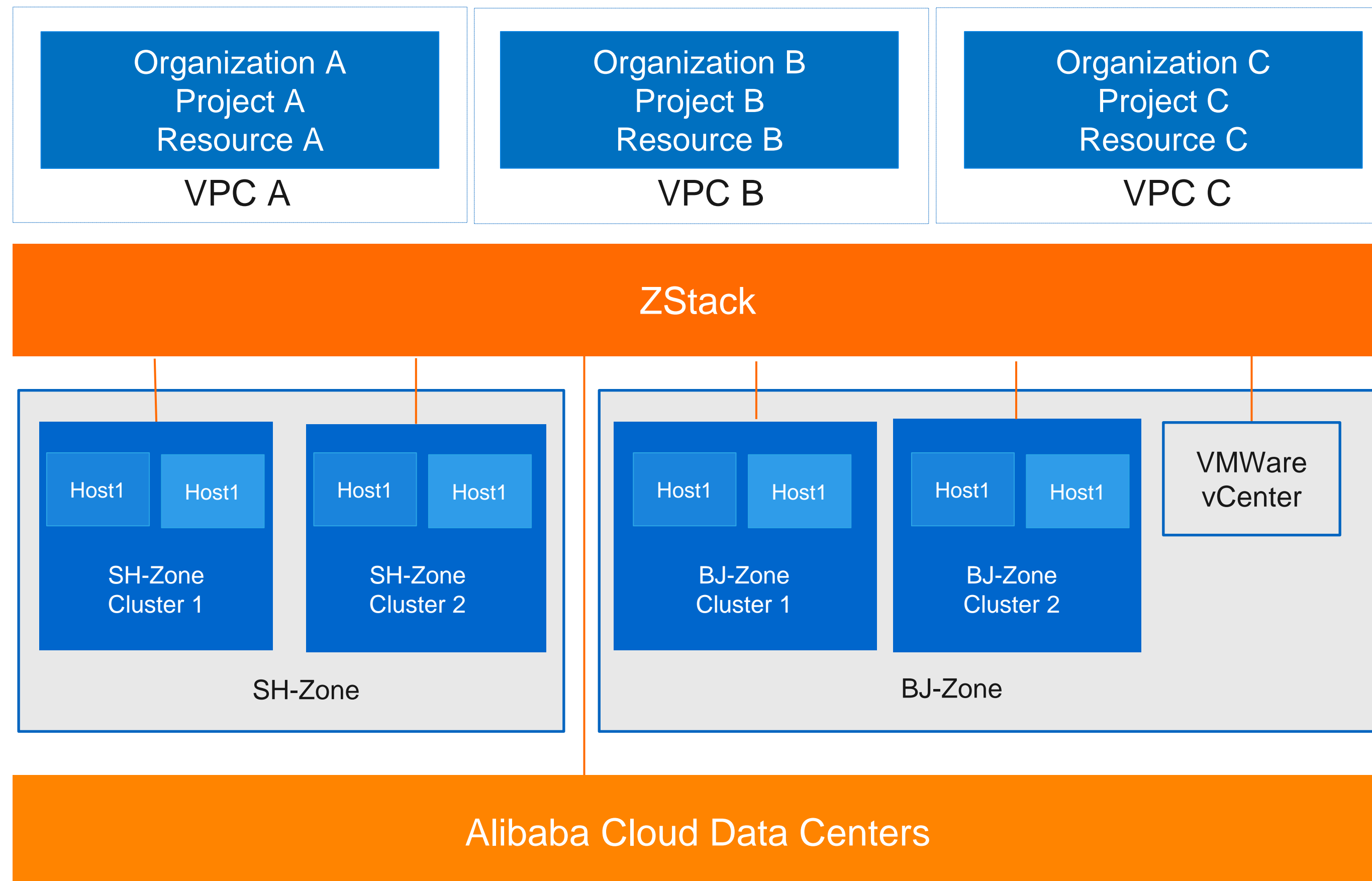
Multi-zone
- A zone corresponds to a data center or equipment room.
- The boundary of various infrastructure resources defined by zone in ZStack environment.

Multi-tenant
- Enterprise Management Module Provides organization structure management, project management, resource access control and tickets management for tenants.

Hybrid Cloud
- Realize the interconnection with Alibaba Cloud in both control plane and data plane, to manage the resources of both private cloud and public cloud through one portal.

VPC
- VPC is a customized network environment with which enterprise tenants can build a logically isolated private cloud.

Result: Nanjing University used ZStack and Alibaba Cloud to build united hybrid cloud platform cross all the campus.

2. Great TCO & cost effectiveness

Alibaba Cloud

Target Customer
vSphere/vCenter/vRealize/NSX-T users who pay a lot for Vmware license
OpenStack clients with relative large DevOps team
Manufacturing, education, transportation, healthcare etc. clients who are usually cost sensitive

Significant license cost saving

	AUD			
	50 CPU License	100 CPU License	200 CPU License	1000 CPU License
vSphere Enterprise Plus - 3 Year 24 x 7 (standard reseller 25% off)	$ 327,950	$ 655,900	$ 1,311,800	$ 6,559,000
ZStack Flagship - 3 Year 24 x 7 (40% off)	$ 204,750	$ 310,227	$ 477,273	$ 1,431,818
Saving	$ 123,200	$ 345,673	$ 834,527	$ 5,127,182
Saving %	38%	53%	64%	78%
Per Year Saving	$ 41,067	$ 115,224	$ 278,176	$ 1,709,061

- VMWare customer needs extra license for vRealize Automation, and NSX-T Data Center
- VMWare customer needs to pay double license cost on >32core servers

Easy operation & maintenance

- Simple architecture
- 30 minutes to setup a production environment
- One click to upgrade the whole environment without downtime

Maximize utilization of existing assets

- Support almost all main stream servers and network devices
- Support various storage (NAS/SAN/SDS)
- Less management resource consumption

Result: By leveraging ZStack, Ele.me could manage 2000+ computing nodes by 1 administrator and saved significant cost.

3. Strong & on demand enterprise service

 Alibaba Cloud

Target Customer
Enterprises, government clients who usually require professional and efficient support for business continuity
IDCs, MSPs requiring extra product features and enhancements
Openstack clients who are getting frustrated by poor service

Service approaches

Approach	Description
Enterprise Service	• Enterprise support with dedicated account manager to enable quicker responses for severe cases
Ticket	• Customer open tickets directly in ZStack ticket system: https://www.zstack.io/account/site/create
Dingtalk Group	• When it's required, a dedicated Dingtalk group can be created for prepaid clients.
Email	• Clients can write email to support@zstack.io

SLA

Item	Detail
Supporting Period	• Flagship edition clients: 5 * 8 • 50 / 100 / 200 or 10000 CPU suite clients: 7 * 24
Response Time	• Response within 4 hours after the request is submitted.
Solving Time	• Technical questions: solve immediately in the response • Severe bugs (impacting on-production processes or systems): 4 hours • Non-severe bugs (not impacting on-production processes or systems): 10 days

Result: 5G Networks leveraged Alibaba Cloud TAM service to ensure high quality service and support.
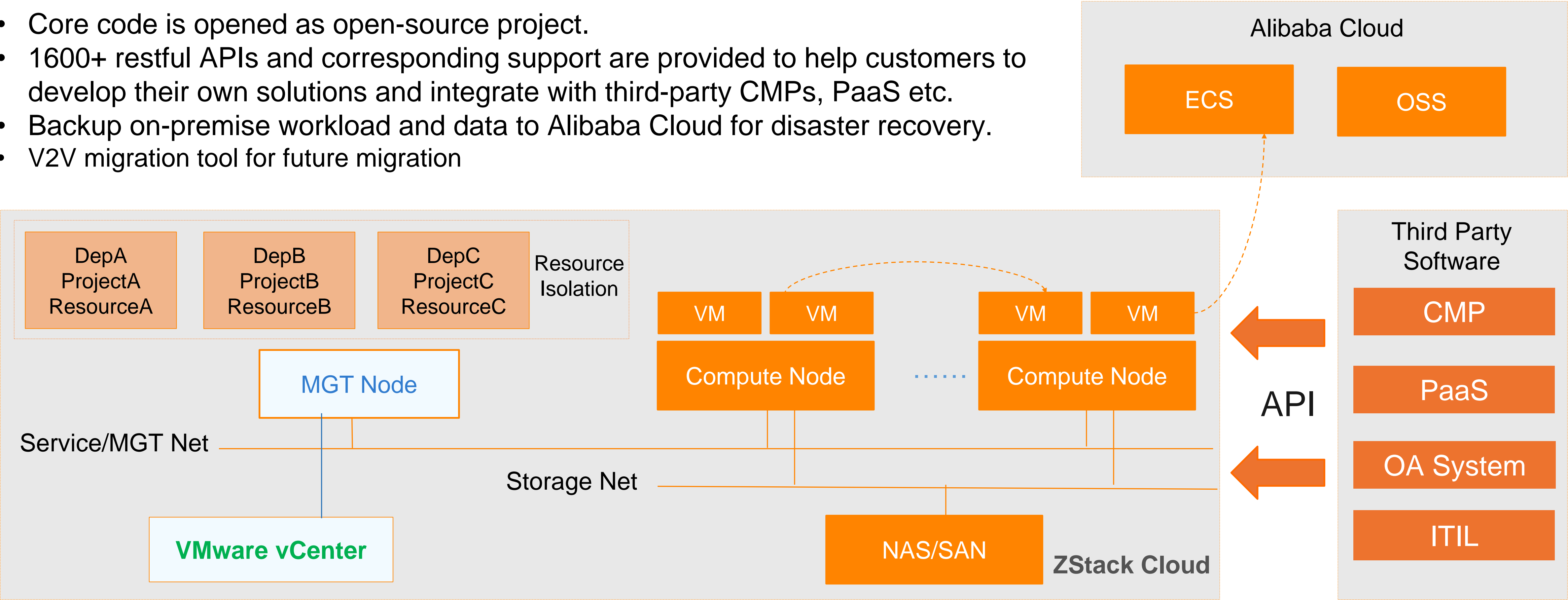
4. Open platform for multi-cloud strategy

Alibaba Cloud

Target Customer
Enterprise clients looking for backup solutions
MSPs managing multiple clouds & DCs
Internet, finance, hi-tech etc. clients who usually require integration with full stack business appications

- Core code is opened as open-source project.
- 1600+ restful APIs and corresponding support are provided to help customers to develop their own solutions and integrate with third-party CMPs, PaaS etc.
- Backup on-premise workload and data to Alibaba Cloud for disaster recovery.
- V2V migration tool for future migration

Alibaba Cloud

| ECS | OSS |

DepA ProjectA ResourceA

DepB ProjectB ResourceB

DepC ProjectC ResourceC

Resource Isolation

Third Party Software

CMP

VM VM VM VM

MGT Node

Compute Node ...... Compute Node

API

PaaS

Service/MGT Net

OA System

Storage Net

VMware vCenter

NAS/SAN

ZStack Cloud

ITIL

Result: Ele.me integrated ZStack with existing applications and implemented self-service application for IaaS resources.

ZStack Key points (vs. VMware vSphere)

Alibaba Cloud

50% Cost

no license adding up
50+% license cost saving
less management resource consumption
free upgrade

90% Features

90%+ Vmware functions
Incl. vCenter, vSphere, VRO, VRA, vSAN, NSX

Open

the fundational code is open sourced.
all functions are realized through RESTful APIs, easily to redeveloped or integrated with third-party software.

Simple and Easy

Simple architecture
Easy to deploy, maintain, upgrade.
high duplicability for sales

	ZStack	VMware vSphere
Installation	Simple	Simple, more than one module
Upgrade	Seamless and fast	Complex, more than one module
Iteration	3 months, respond to feedback	Half a year
Scale	**3~3k+** nodes per single cluster*	Small or medium
Hardware	Flexible, utilize used equipment	Flexible, utilize used equipment
Hypervisor	KVM、VMWare	VMWare
Network	SDN (build-in module,no extra charge)	NSX (extra components and charge required)
Hybrid	Alibaba Cloud (build-in module, no extra charge)	AWS/Azure (extra components and charge required)

ZStack vs VMware Common FAQ

Question 1: What is the difference between ZStack and VMware? What's the benefits for us?

The customer here refers to VMware (more than 95% probability is a virtualized vSphere product). VMware can only achieve virtualization and integrate resources with physical servers. In addition to virtualization, ZStack can also solve resource management issues (multi-tenant, multi-region, hybrid cloud, tickets approval, etc.);

Question 2: What is the difference between ZStack and VMware on the functional level?

VMware functions are more in-depth, ZStack functions are more extensive. The key is to see which product meets the customer demand. In addition, ZStack supports seamless upgrades, and some functional requirements can be quickly obtained through upgrades.

Question 3: How do I migrate from VMware to your platform?

There are two modes of downtime and non-downtime migration, and the corresponding solutions are also different.

Question 4: What functions of VMware can you manage via ZStack?

Common operation and maintenance functions have been included in ZStack, and daily operations do not require logging in to the VMware platform.

Question 5: How are your products licensed, and what is the difference from VMware?

ZStack and VMware are authorized according to the number of server CPUs. The difference is that the ZStack basic authorization includes computing virtualization, network virtualization and cloud management platform; VMware basic authorization only includes computing virtualization, network virtualization and cloud management platform are required Additional separate authorization with high business costs.

03

PART

ZStack License & Support

Alibaba Cloud ZStack License Model

Alibaba Cloud

Edition	Item	Unit	Description
Flagship Edition	Flagship Edition License	CPU	Permanent license with computing, network & storage virtualization
	Flagship Edition Renewal	CPU/Year	Annual 5*8 remote technical support (dingtalk group, email, ticket)
	Extra Feature License	CPU	Extra enterprise features which can be purchased separately: Enterprise Management, Bare-metal Management, Backup Service, and VMware Management
	Extra Feature Renewal	CPU/Year	Annual 5*8 remote technical support (dingtalk group, email, ticket)
	Extra Feature Unlimited License	SET	Extra enterprise features which can be purchased separately: Enterprise Management, Bare-metal Management, Backup Service, and VMware Management (unlimited CPU usage)
	Extra Feature Unlimited Renewal	SET/Year	Annual 5*8 remote technical support (dingtalk group, email, ticket)
Training Service	Onsite Training Service	Person	One week face to face ZStack training (Shanghai)
Consulting Service	Remote API Consulting	SET	Remote API consulting service, valid for 1 month.

50 CPU Suites (New)	100 CPU Suites (New)	200 CPU Suites	1000 CPU Suites
50 CPU Flagship Edition License	100 CPU Flagship Edition License	200 CPU Flagship Edition License	1,000 CPU Flagship Edition License
1 year 7*24 remote technical support (dingtalk group, email, ticket)	1 year 7*24 remote technical support (dingtalk group, email, ticket)	3 year 7*24 remote technical support (dingtalk group, email, ticket)	3 year 7*24 remote technical support (dingtalk group, email, ticket)
Any one of these four extra enterprise features : Enterprise Management, Bare-metal Management, Backup Service, and VMware Management	Any two of these four extra enterprise features : Enterprise Management, Bare-metal Management, Backup Service, and VMware Management	All enterprise features including Enterprise Management, Bare-metal Management, Backup Service, and VMware Management	All enterprise features including Enterprise Management, Bare-metal Management, Backup Service, and VMware Management
25% for renewal since the 2nd year	25% for renewal since the 2nd year	25% for renewal since the 4th year	25% for renewal since the 4th year

Training and Partner Deal Engagement

Alibaba Cloud

Round 0 Certified as ZStack Partner	Round 1 Pre-Sale	Round 2 Shape Solution	Round 3 Contract & Delivery

Development   **ZCCA**

Project Delivery   **ZCCE**

Operation   **ZCCT***

Sales   **ZCCC***

https://en.zstack.io/training/certificationTraining/

- Share Customer ZStack branding and Customer story
- Understand customer High level requirement

- Propose a ZStack solution and Pricing
- Adjust solution according to customer feedback

- Propose a ZStack solution and Pricing
- 5 Days deliver a project and get customer UAT report

1 -2 days	1 -2 days	5 days

Alibaba Hybrid Cloud GTM team
Support partners as always
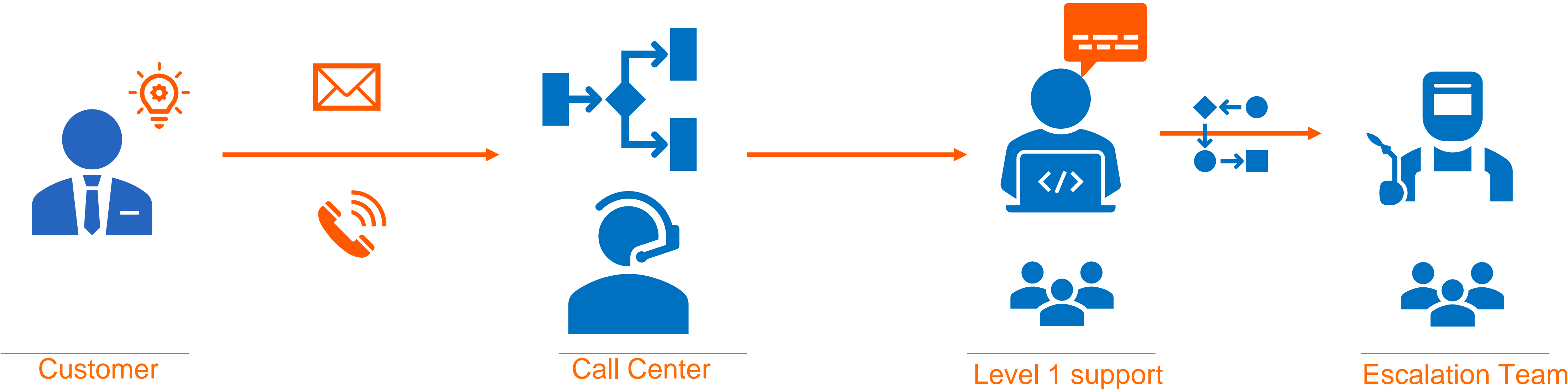
ZStack Support Model

Alibaba Cloud

5*8/7*24 Technical Support

***1 hour** Responding time commitment*

Online Ticket and Hotline* Support

*China Mainland support hotline number
*Email feedback, Remote assistant (English text only)

Customer

Call Center

Level 1 support

Escalation Team

04

PART

ZStack Applicable Scenario & Customer Story

Scenario 1: Hybrid Cloud

Alibaba Cloud

- Unified management for both private cloud and public cloud
- Interconnection of private cloud and public cloud including both control plane and data plane
- Workloads that easy to fluctuation put onto public cloud, workloads that keep stable put onto private cloud
- Leverage public cloud storage to keep backup data

- Unified management portal across private cloud and public cloud

- Best cost efficiency by leveraging both resource of private cloud and public cloud

ZStack Private Cloud — VM VM — ZStack VPC — Express Connect or Internet — Public Cloud VPC — VM VM — Alibaba Public Cloud
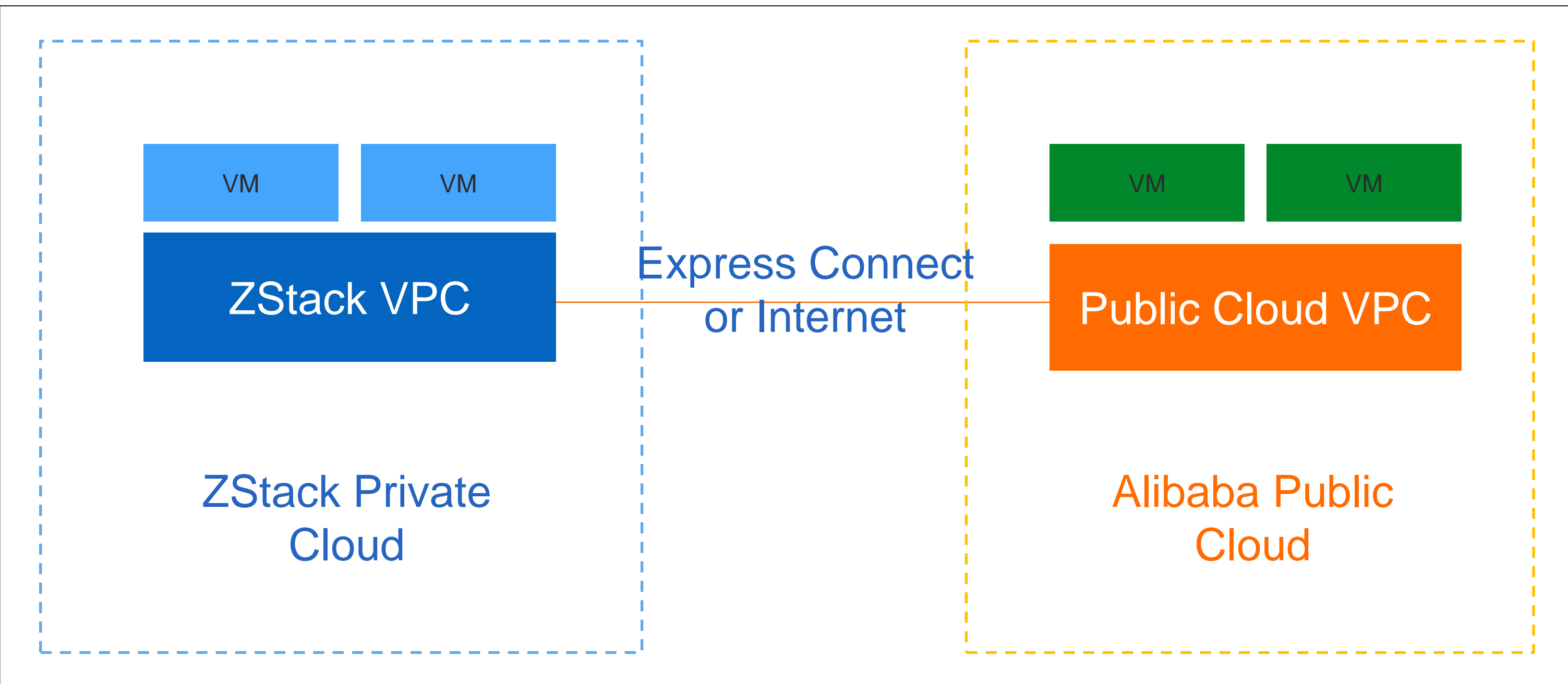
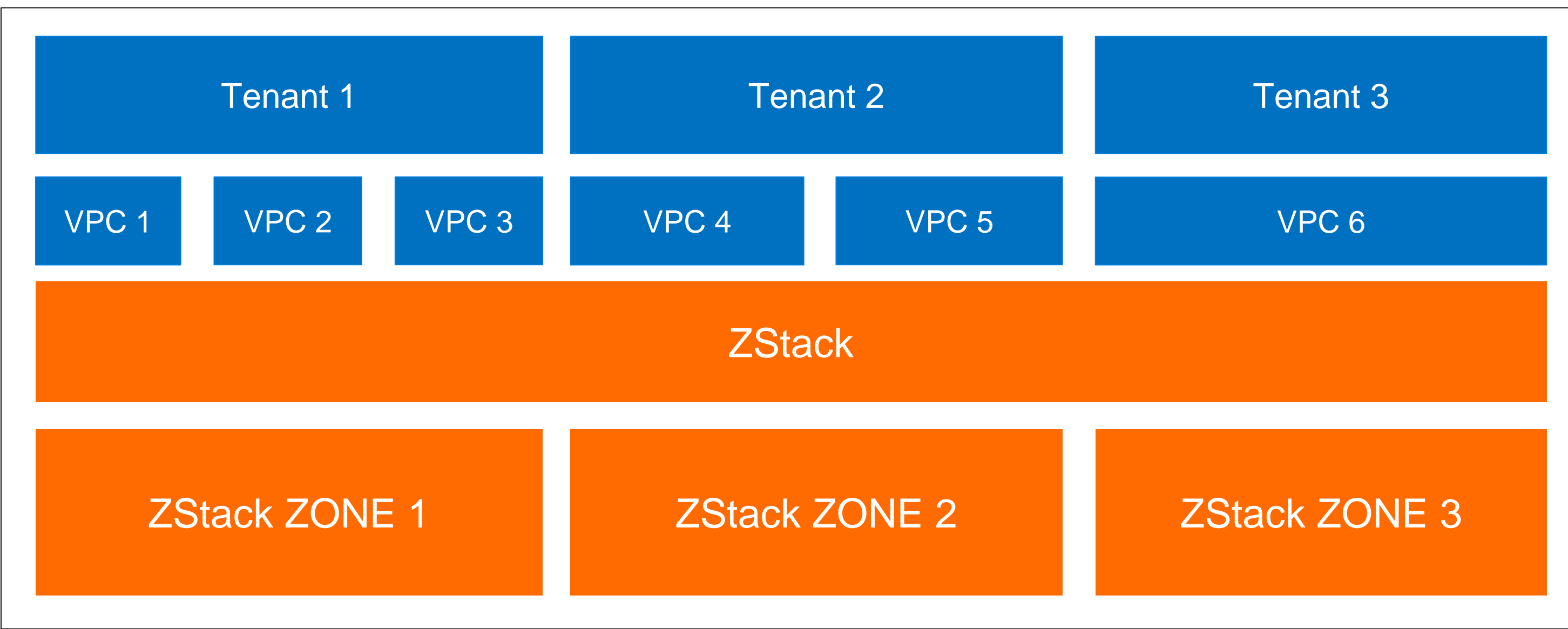# Scenario 2: Managed Virtual Private Cloud(VPC)

Customer Requirements

- Unified management of multiple resource pool
- Resource pools usually are across different geography locations
- Support VPC and multiple tenants features
- Support billing and comprehensive monitoring features
- Support autoscaling feature

Customer Value

- Unified management, delivery on demand, and higher efficiency

- Cost saving by sharing of underlayer physical resources

Technical Solution

Tenant 1			Tenant 2		Tenant 3
VPC 1	VPC 2	VPC 3	VPC 4	VPC 5	VPC 6
ZStack					
ZStack ZONE 1		ZStack ZONE 2		ZStack ZONE 3	

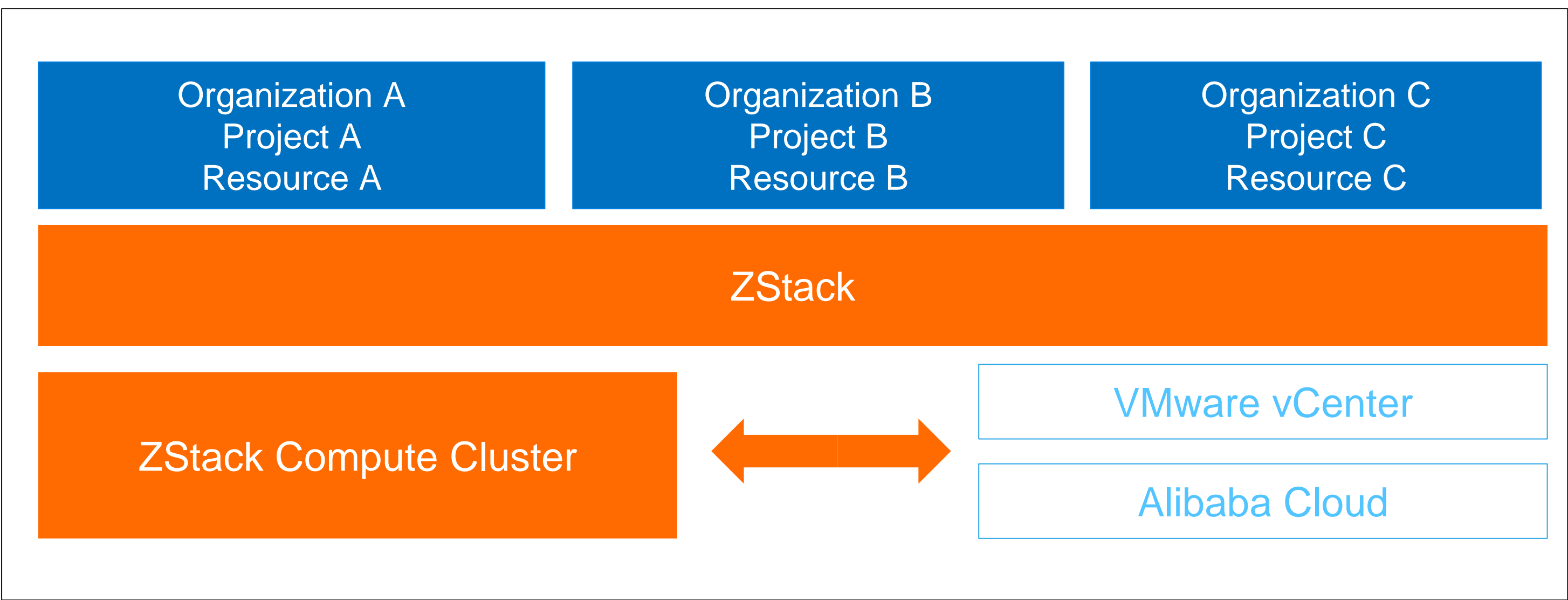# Scenario 3: Private Cloud

Alibaba Cloud

Customer Requirements

- Unified management of different virtual platforms. (ZStack, VMware vCenter, Alibaba Cloud)
- Unified management of ZStack resources in multiple regional branches.
- Migrate VM from VMware vCenter to ZStack.
- Adopt the functions of multi-tenancy, project management and ticket processing flow for resources management, due resource return back and billing.

Customer Value

- Unified management, delivery on demand, and higher efficiency
- More flexibility of services with migration across different virtual platforms
- Improving management efficiency with heterogeneous platform management

Technical Solution

Organization A Project A Resource A	Organization B Project B Resource B	Organization C Project C Resource C

ZStack

ZStack Compute Cluster	⟷	VMware vCenter
		Alibaba Cloud

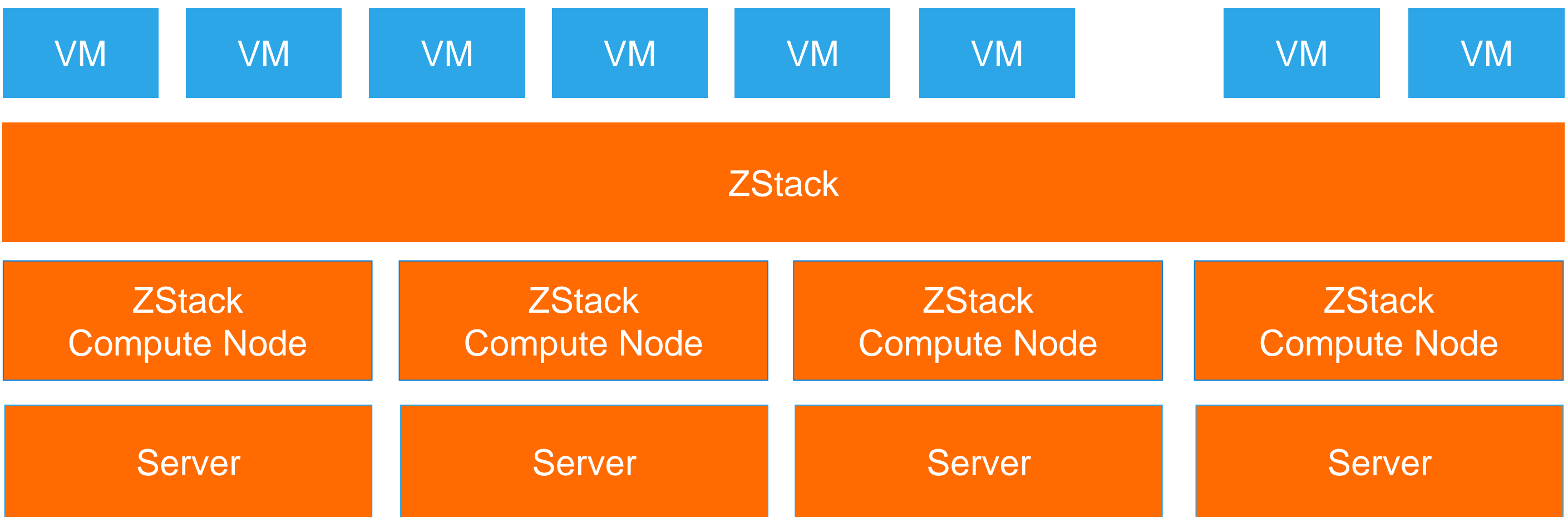# Scenario 4: Servers Virtualization

Customer Requirements

- Consolidation of resources on hosts
- Utilization of existing hardware
- Creating VMs to deploy services.

Customer Value

- Consolidating physical resources, supporting more operating systems and saving cost of servers

- Reducing hardware cost, datacenter cost and power cost.

Technical Solution

VM	VM	VM	VM	VM	VM		VM	VM

| ZStack | | | | | | | | |

ZStack Compute Node	ZStack Compute Node	ZStack Compute Node	ZStack Compute Node
Server	Server	Server	Server

Scenario 5: BigData, AI, HPC

Alibaba Cloud

Customer Requirements

- Deliver VM with GPU pass-through
- Through Baremetal Management Module to deliver physical servers with high-performance compute engine
- Meet the needs of Big Data, AI and HPC scenarios, etc

Customer Value

- Reducing infrastructure maintenance cost.
- Reducing infrastructure lead time.
- Providing flexible resource scheduling for service and transformation

Technical Solution

Big Data	AI	HPC

ZStack

GPU Compute Cluster	General Compute Cluster	Bare Metal Server Cluster

Hybrid Cloud & Managed VPC Customer-XX 5G Networks

Challenge

- Cloud strategy, one cloud cross multiple locations
- Leverage private cloud and public cloud
- Protection of investment, reuse old hardware, take over VMware with unified portal
  - V2V
  - VMs backup

Solution

- Deployed in 3 cities, starts with scale of 200 physical CPUs and SAN storage
- ZStack hybrid cloud solution connected with Alibaba Cloud
- ZStack take over existing VMware setup
- ZStack provide build-in V2V of VMware
- ZStack provide build-in VMs backup function, can backup locally, remotely, even to public cloud

Customer Value

- One cloud, unified portal, simplified management, increased efficiency
- Save of investment
- All opened API, easy to integration
- Hybrid architecture provide more possibility for business inovation
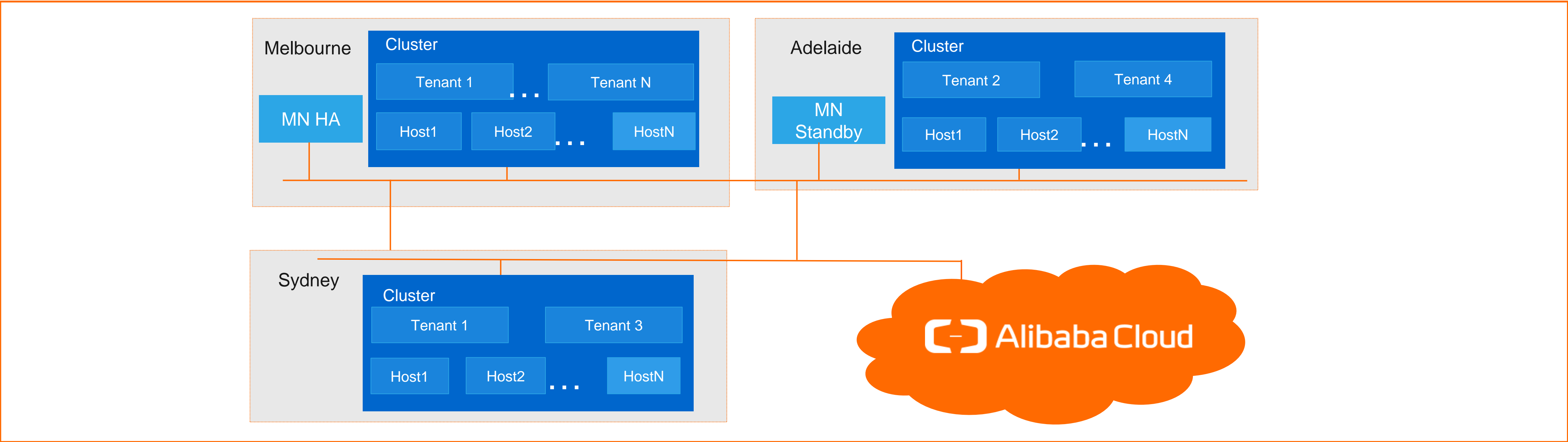
Hybrid Cloud Customer-YY Ele.me

Alibaba Cloud

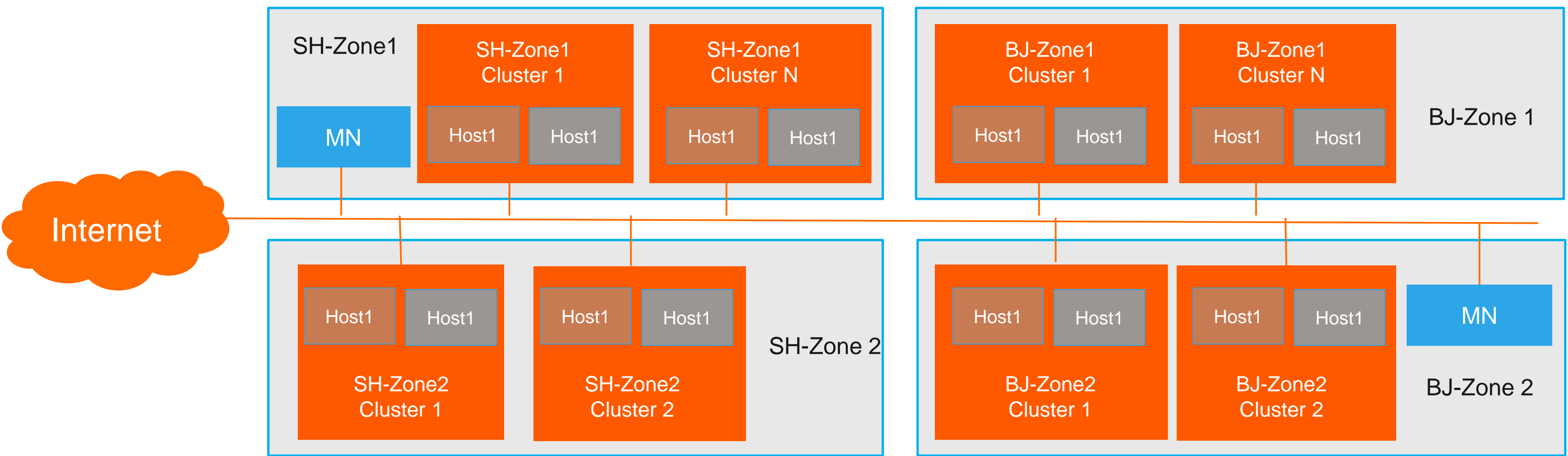| Challenge	Solution	Customer Value
• Massive user access, order generation and data processing. • Requiring fast resource scheduling during peak periods. • The scale of physical resources being huge. Creating VMs on hosts or with manual commands and then delivering them to dev, test and production environments.	• User access put onto public cloud. • Data processing put onto ZStack private cloud and integrated with CI/CD. • Local storage, with HA guarantee for application layer. • Two management nodes manage four zones simultaneously. The scale of hosts reach 2000+.	• Unified Management cross geo • Completely open APIs, easy to integrate with 3rd platforms. • Quick deployment and acceleration of model selection for cloud platform. • Platform stable & strong. Relieving the maintenance team of the burden of complex and tedious routines.

Private Cloud Customer ZZ Banking Corporation

Alibaba Cloud

Challenge

- Build cloud data center in the methods of SDN and SDS.
- Private cloud to support business in financial industry: internal business system, OA system and innovative business.
- Virtual desktop is applied to office and call center; container technology is applied to DevOps platform building.

Solution

- The storage node adopts software defined storage technology based on CEPH, which has low hardware dependence and multi-replica technology to ensure the data reliability
- The persistent storage and SDN can be effectively combined with the container platform to supplement its deficiencies at the resource level.
- Instances running in ZStack support VDI, OA system, Email and IM services etc.

Customer Value

- IAAS hardware & software Cost Saving
- IAAS Operation saving
- Easy and stable

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