Huawei Cloud Solutions Booklet
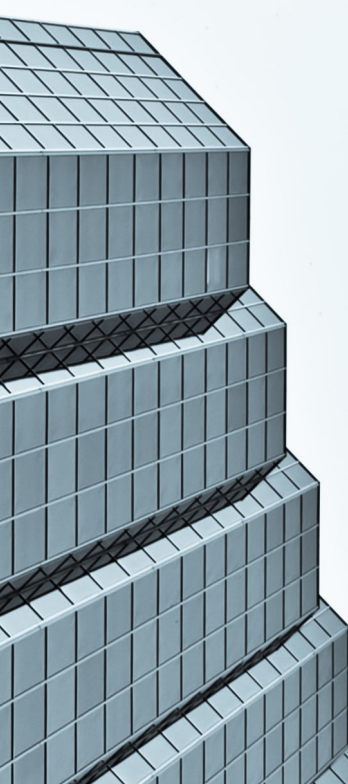
Everything as a Service

HUAWEI CLOUD

Content

HUAWEI CLOUD
EVERYTHING AS A SERVICE
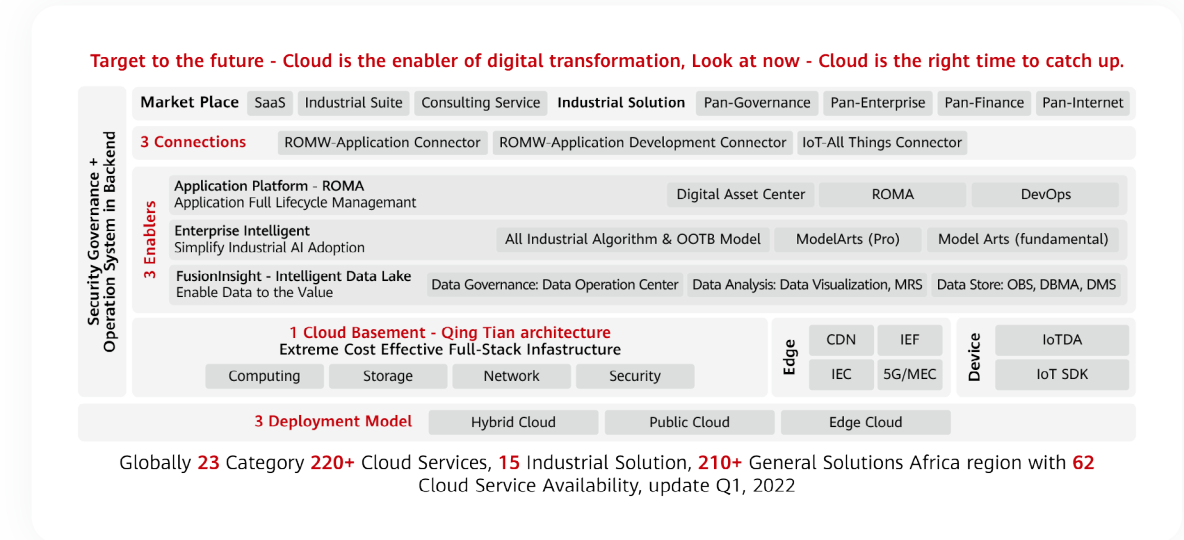
Hosting Cloudification Solution

Everything as a Service

Solution Overview

This solution is targeted to assist customers who are now at the end of their contract with a hosting provider or they're concerned about the hosting service or load shedding. Often, it happens that a customer may require hosting and they may have some questions. So what does hosting on the cloud offer?

Generally speaking, Huawei Cloud provides IaaS & PaaS which is similar to other hyperscalers, and you also can remember "1+3+3" architecture shows below:

Target to the future – Cloud is the enabler of digital transformation, Look at now – Cloud is the right time to catch up.

Market Place	SaaS	Industrial Suite	Consulting Service	Industrial Solution	Pan-Governance	Pan-Enterprise	Pan-Finance	Pan-Internet
3 Connections	ROMW-Application Connector		ROMW-Application Development Connector		IoT-All Things Connector			

Globally **23** Category **220+** Cloud Services, **15** Industrial Solution, **210+** General Solutions Africa region with **62** Cloud Service Availability, update Q1, 2022

1 means one cloud basement innovated by HUAWEI Qing Tian architecture, and all virtualization layers can offload the processes onto Qing Tian boosting card.

3 means enablers, first one is ROMA, with bundled solutions for DevOps and application integration; Secondly is AI, you can use ModelArts, ModelArts Pro (which please note is not available in the African region as yet) a basic one-stop AI development platform, and out-of-box AI capabilities offered by REST API and SDK. The third one is big data, as Huawei Cloud offers FusionInsight as the big data solution offering, which includes data warehouse, open source big data component on cloud, and cloud native big data services.

Another **3** means connections, one connects applications, one connects developers, and one connects devices by IoT.

Second one you need to take into consideration is for security. When talking about Security on Huawei Cloud, we always call it 1, 2 and 3 as below:

"3CS" Security Governance Framework

Protect Your Workloads on Cloud by Huawei Internal Security Governance Framework ①

Huawei Security Best Practic: Setup "Huawei" like security gevernance framework **within one hour**
Security Experts Online: Global security experts online, response to customer requirements 24/7
Full Lifecycle Data Protection: Detect sensitive data by **95%+**

Global & Local Compliance

Platform and Service in Compliance ②

Platform Compliance: Global 70+ compliance certfication and local/industrial white paper, First Hyperscaler in C-STAR, cloud platform and all cloud services compliance to PCI-DSS
Cloud Service Compliance: 100+ cloud services compliance to gobal general security compliance certfication
Best Praactice: 10+ compliance whitepaper released to help customers compliance South Africa passed POPIA, Nigeria NDPR is in progress.

Security Cloud Services

Project in high efficiency, Response SLA ③

Quick Protection: Fix vulnerabilities within 2 hours, better than common detect & fixed time
SeamlessProtection: unified security management online and offline, efficiency upgrade to 5x
High-Effective Protection: Attack block, utilization% host and network bandwidth by 50%

1 is meant for one security platform, by leveraging self-service security cloud services, you can easily protect your workloads efficiently;

2 is meant for global and local compliance certification that we have passed;

3 is meant for 3CS security governance framework. 3CS means "Cloud Service Cyber Security & Compliance Standard."

For the third, it's support. Nearly every country, we are able to setup a local team, and the local Technical Account Manager will respond to you in a very short time to narrow down your business impact. Huawei Cloud offers migration services at the initial stage, during your cloud adoption lifecycle, you can then call out for O&M service, you can subscribe to our support plan for online remote services and you can call out backend experts for dedicated services.

Huawei is a global company and will offer you one-stop professional services as well as by our partner support teams.

One-Stop Global Service

Migration Services   In-Adoption Services   Support Plan   Expert Service

Global One-Stop Support	**170+** Global Support Center	**30 Years** 2B Experiences	**20+** Consulting, approach	

Expert System	**2000+** O&M Experts	**4000+** Support Engineers	**1000+** Global Service Partners	**10 000+** Certified Engineers

Hosting or Cloud Services?

The difference between cloud and hosting services is the location of the servers running the service. "Hosting services" is the general term for technology services using infrastructure located outside the service receiver's physical location. This can be at the vendor's physical location or can be hosted on the cloud. "Cloud services" refers to a specific subset of hosting services that utilize a "cloud" vendor.

The Impact of Cloud for your Business

1. **Scalability.** By leveraging cloud, you can scale your IaaS/serverless/PaaS instance at any time without downtime, you can even scale in/out by different layers, such as VM, container and serverless computing in backend by transparency;
2. **Technical and commercial agility.** You have access to cloud services, at any time and decommissioning of these services without limitations. There are different models you can choose, such as on-demand, reserve instance, and spot instance, monthly or yearly packages.
3. **SLA availability.** Cloud is always designed with multiple, geo-redundancy data centers globally. You can setup any high available workloads, disaster recovery environment or even replicate your data into other international regions.
4. **Access to New Technology** Big data, AI, block chain and other 'new' technologies may not be easy to setup, but on the cloud it can be as simple as a click of a button.
5. **O&M saving.** By employing a responsibility separation model, the cloud components are maintained by Huawei Cloud.

Who is our Target Audience?

Identifying Challenges faced by our Customers Segments

The biggest challenges in Africa are the frequency of power outages and weak local support for hosting services. In addition, we have identified other concerns facing our customers:

Inaccurate Provisioning Timeliness: Resource capacity and utilisation is difficult to estimate and rolling out new technologies can sometimes be difficult.

Data Security Risks: Self-built IDCs experience a high cost for DR. Apart from utilization rate, other factors impacting costs include equipment and network conditions, security protection and investments required for legal and compliance.

Complex O&M: A hosted network is complex; the available IDC capacity is low, the maintenance cost is high, and the software architecture and O&M risks are significant.

Asset Investment Model: CAPEX can be significant outlay for a business looking at new technologies, with asset and cash flow implications.

Application Scenarios based on Customer Requirements

There are 3 scenarios:

• The entire DC is migrated to the cloud;
• Large-scale migration of competitors and
• Migrating key applications to the cloud.

There are four different target customer types:

Strategy-driven: Driven by their digital transformation strategy, new service innovation requires more cloud technologies.

Event-driven: Data migration to the cloud is driven by aging/expiration of equipment rooms, dual-carbon PUE less than 1.3, service loss in a single DC due to power interruption, device out-of-warranty, and service interruption.

Service-driven: Rapid service growth, requiring flexible resource acquisition for 2C services.

Policy-driven: High requirements on service availability and security due to regulatory policies or go-to-market.

Why Huawei Cloud - Our Value Proposition to your Customers

Resource efficiency: On-demand, elastic and fast access to cloud resources.

Innovation acceleration: we focus on the nature of services, use cloud technologies to mine data value, and reduce innovation trial-and-error costs.

Secure and reliable: On-demand purchase of security services requires less investment. Cloud services are more reliable and DR resources are paid on demand.

Cost reduction and efficiency improvement: Cloud technologies improve resource utilization, reduce security DR costs, and improve service innovation efficiency.

Common Customer Objections

1. I see Huawei Cloud has announced cloud service SLA, but how do you guarantee support for your SLA? Is there any local team available?

We commit to an SLA on our portal, in case of any Huawei Cloud platform issue, we will try to resolve the issues, with minimal downtime: https://www.huaweicloud.com/intl/en-us/declaration/sla.html

There are Huawei Cloud teams in Sub-Saharan countries: South Africa (Johannesburg, Cape Town and Durban), Nigeria and Kenya for local support. Any customers in Southern Africa, Western Africa and Eastern Africa has access to a dedicated technical account manager for local support. We also offer online support, according to different support plans you have subscribed to: https://www.huaweicloud.com/intl/en-us/service/supportplans.html

2. How does Huawei Cloud compare with other HyperScale providers?

Technically, Huawei Cloud is similar to other Hyperscalers on IaaS cloud services. However, for big data, and AI, we have an innovative chipset, the Qing Tian hypervisor booting card that we have equipped with special functionalities and features in order to easily access these services. Huawei Cloud offers free POC vouchers to protect your initial investment, we also offer free monthly partner and customer training.

We also remain committed to our ecosystem development, assisting our partners with real-world migration, guaranteeing customer success and joint value creation.

3. Compared with local hosting, are there any TCO savings once I migrate to Huawei cloud?

We offer a TCO calculator saving spreadsheet offline, but you must bear in mind that O&M plays an important role and has a significant variable in TCO estimation. However, according to our customer case studies combined total costs were significantly reduced after migrating to the cloud.

4. What are the target industries for cloud technology?

Digital transformation is everywhere, from SME/SMB to big enterprises. If your customers are thinking about moving to the cloud, they can derive real value when compared to hosting with the cloud.

5. Can I use my external authentication methodology to login to your cloud console?

Yes. With Huawei Cloud support for SAML 2.0 and OpenID integration, you can integrate user authentication by your existing Active Directory or any Enterprise Access Management tools.

6. Please advise on the Huawei Cloud African landscape? How many Point-of-Presence (PoP Site) and edge locations are there?

We have the South African region with two availability zones in Johannesburg, we are busy planning the 3rd AZ in Johannesburg. We are continuously deploying our network PoP, with two PoPs in Johannesburg, one in Lagos (Nigeria) and another one in Nairobi (Kenya). We are busy with the next one in Cape Town (South Africa) as well.

Edge Node (CDN) is available in Johannesburg, Nairobi, Accra and Lagos..

7. How do you access the Huawei Cloud? If I was a hosting a network ISP, can I bring my network to Huawei Cloud?

Customers generally have access to three network access models.

1. Default internet;

2. Site-to-Site VPN;

3. Direct Connect. Within this mode, customers should bring their own network service provider and plugin to Huawei Cloud Direct Connect gateway. Huawei Cloud offers partner direct connections and standard direct connections.

8. Where's my data stored on Huawei Cloud, how can I make sure my data is not stored in China?

Huawei Cloud regions and AZs are deployed around the world and offer high-speed global network connections and localized services. You can select a region to subscribe and deploy services as needed. The region you select is where your data is stored. We will never move your data across regions without your authorization. You can check more information on the Global Products and Services page.

9. Is there any other value added capabilities that your cloud offers that is not available with your hosting solution?

It includes but is not limited to: container platforms, function computing, middleware service, database and data warehouse, big data open source clusters and cloud-native serverless big data platform, AI development platform (training, inference) and OCR API invoke, Chabot, NLP, block chain etc.

10. What's your current position in public cloud market, according to accredited analyst organisations?

Huawei Cloud is growing very fast globally. In the African region, we are building market share and competing with other cloud vendors. Yes, we have a substantial presence in some of the global reports, please kindly refer to https://www.huaweicloud.com/intl/en-us/news.html

11. What's the responsibility matrix after I migrate to cloud?

Security and compliance is a shared responsibility between Huawei Cloud and customers. That is, Huawei Cloud is responsible for the security compliance of cloud services, and you assume the responsibilities of the service security and compliance inside your organization.

Huawei Cloud constantly updates our solution to meet the changing internal and external compliance requirements, to ensure legal and regulatory compliance of cloud services, strictly enforcing security standard evaluations in a range of industries, and shares compliance practices with tenants to keep services transparent.

You need to check the applications and services that you deployed on Huawei Cloud but do not belong to Huawei Cloud against the applicable security laws and regulations.

For more information about Huawei Cloud certifications and regulation compliance, check our Compliance Center and Resources.

12. Do you keep publishing vulnerability updates in real time, for example the famous oc4j vulnerability in last couple of months? Can Huawei Cloud help us to apply the patches for fixing the vulnerability?

Yes. We keep all global vulnerabilities on time from our cloud portal, for more details please refer to: https://www.huaweicloud.com/intl/en-us/notice.securecenter.html. If you would like to update them automatically, you can adopt Huawei Cloud Host Security Service (HSS), there's functionality that can apply the patch.

13. Can I bring my own software appliance into Huawei Cloud infrastructure service? Such as firewall appliance, bundled software appliance or SIEM/APM appliance etc.?

Yes. Most of the appliance images can be deployed into Huawei Cloud automatically, we're open to .ISO format, .qcow2 format, .VMDK format etc. For security appliances that are configured on Huawei Cloud, you need to well-design the VPC and virtual network on Huawei Cloud and deliver the full function test of software appliance HA.

14. What types of Microsoft software and Oracle software can I run on Huawei Cloud?

You can run Microsoft software on Huawei Cloud, including but not limited to: Microsoft Office, Windows Server, SQL Server, Exchange, SharePoint, Skype for Business, Microsoft Dynamics products, System Center, BizTalk, and Remote Desktop Services. You have the flexibility of bringing on-premises Microsoft Windows licenses and deploying them on a Huawei Cloud Dedicated Host subject to Microsoft licensing terms.

In addition, Oracle software can also run on Huawei Cloud, including but not limited to: Oracle Database, Oracle Fusion Middleware, Oracle Fusion Apps like EBS, BIEE, PeopleSoft, Siebel, JD Edwards etc. You must bring your own Oracle products' License on to Huawei Cloud and Oracle products' support responsibility should be you or your Oracle consulting providers.

15. Can I run VMWare or Hyper-V on Huawei Cloud hypervisor?

No. Huawei Cloud doesn't support nested virtualization. Huawei Cloud Bare metal doesn't support running VMWare or Hyper-V hypervisor currently.

16. What data does Huawei Cloud process?

Huawei Cloud processes the following types of data:

Personal data: Personal data means any information relating to an identified or identifiable natural person. We collect personal data from you in the course of your interaction with us for various purposes, such as providing you with the services and maintaining the best operation of the services.

Your interaction with us may include, registering an account with the website, subscribing to the services, completing payment with us, contacting us when experiencing (technical) problems, browsing our Website and configuring your settings for your account.

Huawei Cloud respects and protects your personal data in accordance with the Privacy Statement.

Content data: refers to data stored or processed during the use of Huawei Cloud services, including but not limited to documents, software, images, and audio and video files.

You have the ownership and control of your content data and are responsible for the security of the data. Huawei Cloud offers a wide range of services, including Data Encryption Workshop (DEW), to help you improve data security.

17. How does Huawei Cloud use my personal data?

The Huawei Cloud Privacy Statement describes for what purposes and how we will process your data, and how or why your personal data may be shared with third parties. After obtaining your explicit consent, we will share the data only within the scope of your authorization to the third parties that you have designated. We may disclose your personal data to our associated companies to provide you with transaction, service, or security support.

18. How does Huawei Cloud protect my personal data?

We attach great importance to the security of your personal data. We take all appropriate physical, organizational, and technical measures to protect your personal data.

For example, we use encryption to ensure data confidentiality; use trustworthy protection mechanisms to prevent malicious data attacks; deploy access control mechanisms to ensure that only authorized personnel can access personal data; and raise awareness among employees about the importance of protecting personal data through security and privacy protection training sessions.

We also incorporate personal data protection management and control measures into the personal data processing lifecycle. You can check our personal data protection practices for more information.

19. Does Huawei Cloud Transfer My Data to Other Regions or Countries?

Content data: : You can decide where your content data is stored. Huawei Cloud will not transfer your content data to other regions without your explicit consent or unless required by legal obligations.

Personal data: We provide products and services for you through our global resources and servers. Any personal data we collect may be stored in the countries or regions where we, our affiliates, service providers, and subcontractors are located. This means that your personal data may be transferred to other jurisdictions outside the country or region where the product or service you use is located, or may be accessed from these jurisdictions.

The laws protecting personal data vary by jurisdiction. Different jurisdictions may have laws protecting personal information to varying degrees or may not have personal data protection laws. Huawei Cloud ensures that your personal data is protected in compliance with applicable laws, regulations, and the Privacy Policy Statement.

20. What security/privacy certificates has Huawei Cloud passed?

Huawei Cloud is committed to building secure and trusted cloud services. The infrastructure and service security provided by Huawei Cloud has been reviewed and approved by independent third-party authorities recognized throughout the industry and has earned security certification from numerous organizations.

Huawei Cloud has been certificated by various international authorities and is compliant with industry standards. Learn more in [Compliance Certificates] of the Compliance Center. In addition to the third-party certifications, you can find solutions to compliance problems in [Country/Region-specific Guidance] and [Industry-specific Guidance] of the Compliance Center.

21. (To hosting provider only) If I'm running my hosting portal (HWM & cPanel), Magento, Wordpress etc. is it possible to adopt it on Huawei Cloud?

Yes. But you need to manually install, configure and deliver the O&M hosting platform on top of Huawei Cloud infrastructure.

Huawei Cloud Optical Character Recognition (OCR)

Everything as a Service

What is Huawei Cloud OCR?

Optical Character Recognition (OCR) detects and extracts text from images, scanned copies, PDFs, and OFD files, and converts the recognition results into an editable and structure JSON format. Huawei Cloud OCR provides REST APIs, so you can use programming languages such as C#.net, Python, Java, Go etc. to invoke OCR APIs to extract text from images. Huawei Cloud OCR allows you to automate the collection of key data, helping you to build an intelligent service system.

For details about how to obtain APIs, see https://bit.ly/3OzlhNC, OCR also provides software development kits (SDKs) for multiple programming languages. For details about how to use SDKs, see https://bit.ly/3OqmkzG.

How Huawei Cloud OCR is Different with other HyperScalers?

Huawei Cloud is the only HyperScaler which offers customized OCR format based on our customer requirements. As an example, we can define any African country's ID card, passport, driving license, or invoice of any type. We also offer an OCR template design platform which is called "ModelArts Pro" as an AI development platform for you to define your own template easily.

Typical Out-of-box OCR API:

General Purpose OCR:
Text in snapshots/images (including web images and more) can be automatically identified.

Card OCR:
OCR automatically identifies information in images of certificates such as passports, ID cards, driving licenses, and converts the information into editable text.

How to Quick Start on Huawei Cloud OCR

If you are a first-time user, the following sections are easy for you to on board:

Function Description:
Learn about the different OCR functions, including General OCR and Card OCR.

Getting Started:
Learn how to use OCR by referring to the Optical Character Recognition Getting Started.

Using OCR:
Learn how to call OCR APIs or SDKs by referring to the API Reference or SDK Reference, if you are familiar with code compilation.

Progressive Knowledge:
Learn how to get started using OCR.

How to Adopt Huawei Cloud OCR in deep dive

You can access OCR through the management console, or using HTTPS-based APIs.

You can subscribe to your desired services on the management console and view the number of successful and failed API calls.

If you access OCR through APIs, you can integrate it with a third-party system.

The procedure is as follows:

1. **Apply for a service.** You can apply for your desired service on the management console. For details about how to apply for a service, see Applying for a Service in Optical Character Recognition API Reference. (You only need to apply for a service once).

2. **Obtain request authentication.** You can use either of the following authentication methods when calling APIs:
   - **Token-based authentication.** Requests are authenticated using tokens. For details, see Authentication > Token-based Authentication in Optical Character Recognition API Reference.
   - **AK/SK-based authentication.** Requests are authenticated by encrypting the request body using an AK/SK pair. AK/SK-based authentication provides higher security. For details, see Authentication > AK/SK-based Authentication in Optical Character Recognition API Reference.

3. **Call an API.** OCR provides services through APIs. For details, see Optical Character Recognition API Reference.

4. **Monitor service usage:**
   - View the number of successful API calls on the OCR management console.
   - View historical data such as the number of successful or failed API calls on the Cloud Eye.

Common Customer Objections

1. Is it possible for me to visualize the OCR API consumption?

Yes. First login to HUAWEI CLOUD OCR console. And then navigation pane on the left, choose Service Monitoring, and view the API usage.

Service Monitoring
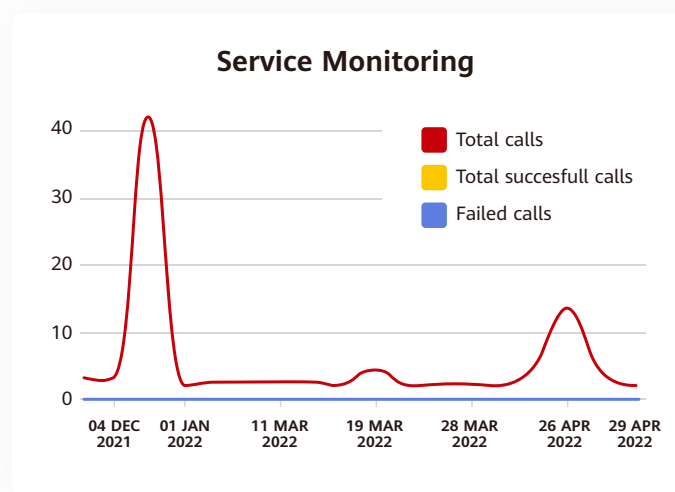
2. What is the number of concurrent OCR API calls?

OCR is a public cloud service that offers resources sharable to all tenants. The number of concurrent API calls is dynamically adjusted based on the call requests of tenants.

If the number of concurrent API calls is insufficient during peak hours, you can use either of the following methods:

- Use the retry mechanism to rectify the fault by checking the return value in the code and retrying the requests after a short period of time
- Alternatively, check whether the results of the previous request were returned at the backend. If they were, send the next request

If you need more concurrent API calls, especially continuous concurrent API calls, contact your Huawei Cloud customer service and describe your application scenarios and concurrency requirements in detail.

3. How to easily invoke OCR API for test?

You can send a request based on constructed request messages using any of the following three methods:

- cURL. cURL is a command-line tool used to perform URL operations and transfer files. It serves as the HTTP client that can send HTTP requests to the HTTP server and receive response messages.
- Code. You can call APIs through code to assemble, send, and process request messages.
- REST client. Both Mozilla Firefox and Google Chrome provide a graphical browser plug-in, that is, REST client, to send and process requests.
  Alternatively, check whether the results of the previous request were returned at the backend. If they were, send the next request

4. Can I store the input images/snapshots locally?

You can store the input data locally or in the Huawei Cloud object storage bucket.

The difference is that if the network is unstable, the network transmission latency is longer when OCR reads local image files than when OCR reads images files stored in the object storage bucket located in the same region as the OCR.

5. How Do I Accelerate the Response to a Service Call?

Troubleshooting:
- Check the image size. If the image size is too large, it takes a long time to transmit the image over the network.
- Check whether the network bandwidth is stable and whether the network fluctuates.

6. Is my source data stored in your cloud?

Huawei Cloud will deliver backend GPU instance memory processes for inference only, there will not be any storage of your inputted data definitely.

7. Is Huawei Cloud OCR an industry-specific offering?

OCR is a general functionality that is not fixed on specific industries, in addition we have success stories across industries and geographies.

8. What about the OCR market development strategy?

- Industry-focus: logistics, financial reimbursement, Internet, large enterprises, finance, health insurance industry large customers.
- Partners: through ISV, industry solution provider factory expansion, industry leading platform vendor cooperation, being integrated, to offer end users with complete solutions

SAP on
Huawei Cloud

Everything as a Service

Why ERP on the Cloud?

Enterprises' IT systems are becoming information-based, digital, and intelligent. This will allow IT infrastructure to be flexible, scalable, secure, reliable, cost-effective, and intelligent.

The enterprise resource planning (ERP) system is the core asset of an enterprise IT system, and coordinates financial resources, human resources, and supply chains. Therefore, moving ERP to the cloud is a vital step in IT transformation.

Flexible
Service usage fluctuates around the clock, and resource demands change rapidly as enterprises grow. To cope with these fluctuations, IT infrastructure must be flexible and scalable.

Cost-effective
Cloud ERP reduces total cost of ownership (TCO) by over 30% by reducing hardware costs, time cost of initial deployment, system O&M costs, and lifecycle management costs.

Secure and Reliable
The service level agreement (SLA) is critical to the ERP service. It poses high requirements on continuity and reliability of both upper-layer applications and databases. High availability (HA) and disaster recovery (DR) systems for ERP can be deployed on the cloud to help enterprises remain committed to the SLA.

Intelligent
An increasing number of enterprises expect their ERP to integrate with cutting-edge technologies, such as big data, IOT, and AI. This allows businesses to respond to ever-changing market and service requirements and achieve efficient, intelligent, and agile digital operations.

Why Huawei Cloud?

Deploying SAP services on Huawei Cloud leverages its secure, stable, and high-performance infrastructure as well as powerful EI, big data, and lifecycle management services. This helps enterprises overcome the disadvantages of traditional ERP systems, simplify enterprise management, reduce costs, optimize operations, and facilitate digital transformation.

Low TCO: The system is plug-and-play and requires no O&M, and the TCO is reduced by over 30% due to the pay-per-use model.

Flexibility and Efficiency: Backup and DR can be implemented with just a few clicks, monitoring data is displayed on a full screen, and application management efficiency is improved by more than 60%.

Quick Deployment: Release time can be shortened by more than 30%

Security and Reliability: The entire platform, all nodes, and all services have security certifications.

Outstanding Performance: Performance is improved by more than 20%, and the SAPS value is the highest for its specification.

Pay-As-You-Go: Resources are scaled up and down in minutes, avoiding resource shortage and waste.

Introducing application scenarios

Entire SAP System on Cloud: The entire SAP system is deployed on Huawei Cloud. You can access the SAP system through the IPsec VPN tunnel or Direct Connect to use resources with high specifications, performance, and security. In addition, Huawei Cloud provides intuitive O&M capabilities. Perfect for enterprises that have never deployed an SAP system before, have few O&M personnel, or have uncertain hardware resource requirements.

SAP Dev and QAS on Cloud: The production system is deployed in your data center, and the development and test systems are deployed on Huawei Cloud. The two on-cloud systems are connected to the production system through the IPsec VPN tunnel or Direct Connect. Perfect for enterprises that need quick development and need to verify new requirements quickly.

SAP DR System on Cloud: The production system is deployed in your local data center, whereas the DR system is deployed on Huawei Cloud. The SAP HANA system replication function ensures data synchronization and improves system reliability. You can secure your system with minimal investment. Perfect for enterprises whose existing SAP system does not have a DR system due to regional or budget constraints.

SAP on DeC: You can apply for dedicated physical devices and regions with computing, storage, and network resources. This ensures data security and service stability. Perfect for medium- and large-sized enterprises that have high data security requirements.

SAP on Huawei Cloud IaaS Solution Architecture

SAP on Cloud solution provides one-stop SAP platform services for enterprises, facilitating digital transformation with industry-leading Huawei Cloud IaaS services, value-added service like big data and Machine Learning capabilities, as well as SAP management and O&M services. Regardless of experience with SAP, enterprises can easily use Huawei Cloud's automatic installation and deployment tools and ecosystem partners to quickly build an environment and launch a system. See an overview of the architecture below:

SAP					
S/4HANA	BW/4HANA	Business Suite	SAP Hybris	Business One
BusinessObjects	BPC	SAP HANA Express Edition	HANA	PO
Application services	Automatic deployment	Automatic backup & recovery	Automatic capacity expansion	SAP full-screen monitoring	System cloning & refreshing
Big data platform	Data extraction	Data modeling	Data governance	AI algorithm library	
Integrated middle ground	Application integration	Data integration	API integration	IoT integration	Cloud integration
Cloud infrastructure as a service (IaaS)	Computing services	ECS	BMS	IMS	
	Storage services	EVS	OBS	CBR	DES	SFS
	DR service	SDRS			
	Network services	VPC	ELB	VPN	Direct Connect
	Security services	DBSS	KMS	WAF	
Database	SAP HANA	SAP ASE	ORACLE	Microsoft SQL Server	IBM DB2

Common Customer Objections

1. Why Do I Deploy SAP System on the Cloud?

Challenges faced by enterprises using SAP applications and industry solutions:

High costs
The investment in SAP application servers and HANA servers is significant. Costs for equipment, electricity and O&M increases annually.

Complex O&M
O&M of SAP systems and hardware needs to be performed by a professional O&M team to analyze and resolve problems in real time. For many enterprises, costs for maintaining dedicated team are high and the input/output ratio is too low.

Low resource utilization and total cost of ownership (TCO)
Enterprises have a large number of SAP development, test, and training systems this leads to scattered resources, low utilization, and additional investment. In addition, enterprises purchase traditional servers based on the data volume over three years. However, the resource utilization is low (about 20%), causing serious resource waste and increasing TCO.

Slow capacity expansion
When enterprises find that the server resources cannot meet their requirements, they need to purchase additional hardware, plan the system shutdown window, and stop the production system. Data migration between servers is required for capacity expansion, which adversely affects enterprise services.

Long delivery period
It usually takes one to two months for purchasing traditional hardware, which greatly prolongs the entire SAP project delivery period.

Poor flexibility
In daily use of SAP systems, business departments often need to test the data of the production system. Traditionally server procurement, system installation, and data copy often take weeks or even months, prolonging the progress.

Low data center security
In traditional equipment rooms, security policies, access control, power protection, temperature and humidity control, water supply and drainage, ESD prevention, and security zone division cannot be fully perfected. In addition, enterprises cannot have a dedicated security team to ensure the security of the entire system and data.

Weak service continuity mechanisms and data security
The uninterruptible running of application systems is intensely demanded because more and more work relies on the assistance of IT systems. Hardware and software failures, single points of failure (SPOFs), natural disasters, or even system downtime for planned maintenance, may adversely affect service running and data security. How to ensure service continuity and data security is a big challenge faced by IT systems.

Advantages of migrating enterprise systems to the cloud
On-demand use and lower costs, ensuring maximum resource utilization and achieving the lowest TCO.

Simple capacity expansion
Capacity expansion on the cloud is much easier. Deploying SAP systems on the cloud can utilise unlimited resources on the cloud and expand capacity, with the increase of data volume.

Flexibility
Cloud computing provides enterprises with more flexibility. Enterprises can determine whether scaled up or down as required. In addition, for temporary service test requirements, SAP systems on the cloud can be purchased on demand for quick deployment.

Professional O&M
All hardware O&M are performed by the O&M team of cloud vendors. Enterprises can focus on enterprise service innovation and IT digital transformation.

Shortened project period
One-click environment provisioning can be implemented on the cloud.

Security
Cloud vendors have security O&M teams dedicated to data center security policies, access control, power protection, temperature and humidity control, water supply and drainage, ESD prevention, and security zone division, meeting national security standards and ensuring the security of the overall system and data.

2. What specifications does Huawei support? What is the price?

For the update to date list, please refer to:
https://www.sap.com/dmc/exp/2014-09-02-hana-hardware/enEN/#/solutions?filters=v:deCertified;iaas;ve:5

The list price of these certified computing flavours, please refer to:
https://www.huaweicloud.com/intl/en-us/pricing/index.html#/ecs

3. What are the advantages of SAP on Huawei Cloud solution when compared to on premise or hardware self-building?

As a cloud service provider in the market, Huawei is also a hardware vendor. With its years of technical accumulation in the hardware field, SAP on Huawei Cloud has the following advantages:

SAP on cloud
The I/O performance of SAP systems on Huawei Cloud is four to five times that required by SAP certification and two to three times better when compared to other cloud vendors.

Large specifications
Currently, Huawei Cloud provisions a BMS for SAP HANA with up to 4 TB of memory.

Automation and template
Huawei Cloud allows the automatic deployment of HANA databases, facilitating quick and automatic provisioning of enterprise systems.

High reliability
Huawei Cloud allows the DR systems of SAP systems and databases deployed both on and off the cloud or in two AZs on the cloud. Huawei Cloud provides highly reliable architecture for applications and databases.

4. What SAP products did Huawei Cloud SAP solution support?

SAP products supported by Huawei SAP on Cloud solution:

Database: SAP HANA, SAP HANA (express edition), and SAP Adaptive Server Enterprise (ASE)

Middleware: SAP NetWeaver

Application: SAP S/4HANA, SAP BW/4HANA, SAP Business Suite, SAP Business One, SAP Business Warehouse, SAP Hybris, and SAP Business Object

5. How to make sure security of SAP products deploy on Huawei Cloud?

Huawei is one of the first enterprises that got all security certifications from the Ministry of Industry and Information Technology (MIIT). All Huawei data centers meet the requirements of Tier 3+ certification. The security of SAP products deployed on Huawei Cloud is ensured in terms of border security protection, comprehensive host and application security protection, all-round network isolation and access control, and professional database security. You also can choose cyber security cloud service and host level security cloud service, data at-rest encryption, data on-the-fly encryption etc. to protect your SAP workloads on cloud.

6. Does Huawei Cloud offer SAP software licenses and consulting service?

No. Huawei Cloud cannot offer SAP software and its license however, we can recommend our local, SAP certified partners to you.

7. How quickly can I deploy SAP software on Huawei Cloud?

Yes. You can provision Huawei Cloud IaaS that support running your SAP software in a couple of minutes, you also can setup SAP dev/test/QA environment by Huawei Cloud SAP automation template (SAP 1809, SAP 1909, HANA 2.0 etc.) with "one click". You can also migrate legacy SAP software on-premise or in other clouds to Huawei Cloud with real-time replication.

8. How do I backup SAP systems and HANA platform on Huawei Cloud?

For SAP systems like SAP S4/HANA we can offer VM snapshot (cloud native backup); HANA platform and we're certified with SAP HANA plugin, this means that you can configure SAP HANA studio to configure backup storage to HUAWEI CLOUD object storage.

Regarding the HA design, it is recommend to create a HA and disaster recovery system so that it can be used to restore SAP HANA quickly if an error occurs, thereby ensuring SAP HANA reliability.

For details about operation requirements and notes, see SAP HANA Database Backup and Recovery released by SAP.

You can also refer to the SAP HA and DR Guide.

9. How do I deploy SAP HANA on Huawei Cloud?

On Huawei Cloud, you can deploy SAP HANA on Elastic Cloud Servers (ECSs) in the single-node deployment mode. You can log in to the public cloud management console to apply for required cloud servers based on your deployment scheme and then install and configure SAP HANA.

For details about how to deploy SAP HANA on ECSs, please refer to https://support.huaweicloud.com/intl/en-us/ugs-saphana/saphana_02_0004.html

10. How do I deploy HA and Disaster Recovery SAP systems?

Compared with traditional HA, cloud-based HA has the following advantages:

Agility: HA systems can be deployed on the cloud quickly and effectively. However, to realize traditional HA, you need to purchase servers and hardware, complete hardware planning, and require skilled engineersfor construction.

Flexible expansion: HA systems on the cloud can be dynamically expanded as required to meet system performance requirements. However, the traditional HA architecture is fixed and not easy to be dynamically expanded.

O&M: You do not need to maintain the cloud-based HA that maintained the cloud service providers. However, traditional HA requires local O&M teams for maintenance.

Reliability: HA on the cloud can be deployed in different regions based on your requirements to achieve cross-region HA and ensure system security.

Costs: Compared with traditional HA, cloud-based HA is cost-effective.

HUAWEI CLOUD provides comprehensive HA and DR schemes for SAP HANA.

For details, see SAP HA and DR Guide.

11. How do I estimate the sizing on Huawei Cloud?

Before sizing, determine the SAP system indicators, including memory, CPU, disk capacity, and I/O performance. You are advised to use the SAP Quick Sizer tool to perform the sizing. Cloud servers support Auto Scaling (AS).

For additional information about the SAP sizing, log in at https://www.sap.com/about/benchmark/sizing.html.

12. How do I connect to SAP system after I migrate or deploy them on Huawei Cloud?

You can use IPsec VPN tunnels or Direct Connect. You will be billed for the IPsec VPN based on the bandwidth. For Direct Connect, you will be billed by the telecom operator, and Huawei charges you only for the port use. After the network connections are established, you can log in to the SAP system on the cloud using the SAP GUI or a web browser, which is the same as accessing the system offline.

For personnel on business trips, you can connect to the enterprise intranet through the VPN and then to the SAP system on Huawei Cloud. Alternatively, you can purchase an SSL VPN from Huawei Cloud Marketplace, and dial up to connect to the public network and the VPN to access the system.

Backup & Disaster Recovery Solution

Everything as a Service

Solution Overview:

With the rapid development of the cloud computing industry and ever-increasing customer needs, the IT infrastructure at organizations of all sizes are placing more and more services onto a cloud framework. This move presents enterprises with some daunting challenges in ensuring service continuity.

The Cloud Disaster Recovery and Backup solution provides customers with multi-cloud and cross-cloud DR and backup capabilities with support for comprehensive data protection policies. It guarantees service continuity and keeps critical data secure with solution-level high reliability.

Backup and Archive
Backup and Archive provides a secure, economical and easy-to-manage data protection solution for backing up and archiving local data to the cloud, reducing costs and mechanism complexity with as-a-service convenience.

Cross-Cloud Disaster Recovery
This solution is designed for customers' local IT systems providing applications on the cloud. The solution provides DR solution consulting and DR services for applications, virtualization platforms, and databases, as well as on-demand drills.

On-Cloud Disaster Recovery
The On-Cloud Disaster Recovery solution covers three scenarios: cross-AZ DR, cross-region DR, and on-cloud 2 site 3 DC DR.

Business Challenges:

High Costs in DR Center Builds and O&M
To build a traditional DR center, enterprises need to build or rent equipment rooms and invest lots of manpower in maintenance and testing. Accomplishing a full DR mode incurs high CAPEX and OPEX as the arms of both or multiple centers must reach the same scale and achieve near real-time transmission.

Many Restrictions on DR Drills
If a DR drill is performed in a traditional DR center, equipment rooms and cables need to be scheduled, and some cold standby devices need to be powered on, which causes a high fault rate. Switchovers may delay or even fail at the critical moment in spite of the drills, leaving the enterprise vulnerable with weak service recovery capabilities.

Complicated Data Synchronization Policies
The synchronization policies for hosts, databases, and storage devices are complicated and restricted by the transmission distance and data volume. In addition, the data encryption/decryption mechanism complicates deployments and maintenance. As a result, some data becomes invalid, or the system cannot meet the designed RPO.

Architecture Difficult to Implement
Core services require multi-center architectures to ensure service continuity, requiring large amounts of investment and extensive consideration in design as to how all the parts of the architecture will collaborate. Implementing this architecture with a traditional DR model equates to high costs and the benefits are limited.

Typical Scenarios

**Cross-Cloud Backup:** Cost-Effective and Secure Enterprise Backup Solution
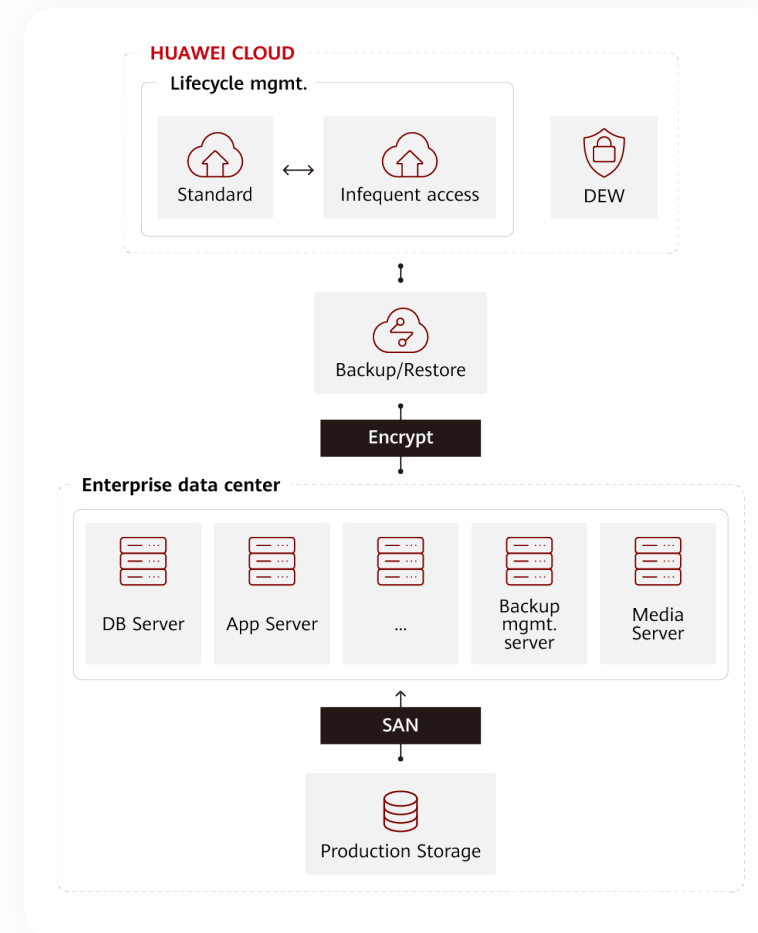
Economical and Efficient Backup - Storage resources are billed by usage. Upfront investments are reduced by 20% to 80%. Data is transmitted after deduplication and compression, saving you big on storage costs while shortening the backup window often by as much as 75%.

Secure and Reliable Data Transmission and Backup - Data is encrypted throughout the entire process: at the source end, during transmission, and in OBS. Data durability reaches 99.99999%.

Cross-Cloud DR - HA Public Cloud DR Center
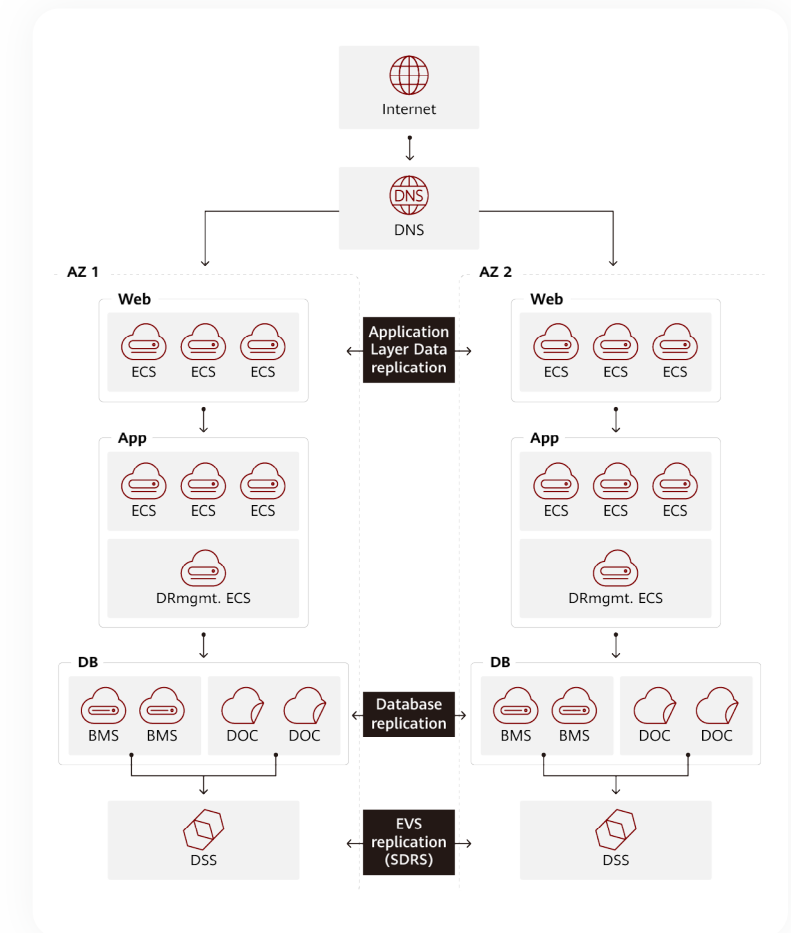
Advanced replication technology for the layers and other particulars in your profile:

Application layer: multi-cloud architecture and multi-cloud connections switchover

Virtualization layer: data synchronization supported by the ecosystem cooperation solution

Database layer: replication software of mainstream databases, such as Oracle and MySQL

Storage layer: asynchronous replication of Huawei storage arrays to HUAWEI CLOUD Dedicated Enterprise Storage Service (DESS)

On-Cloud DR - Intra-City DR Capability with RPO = 0
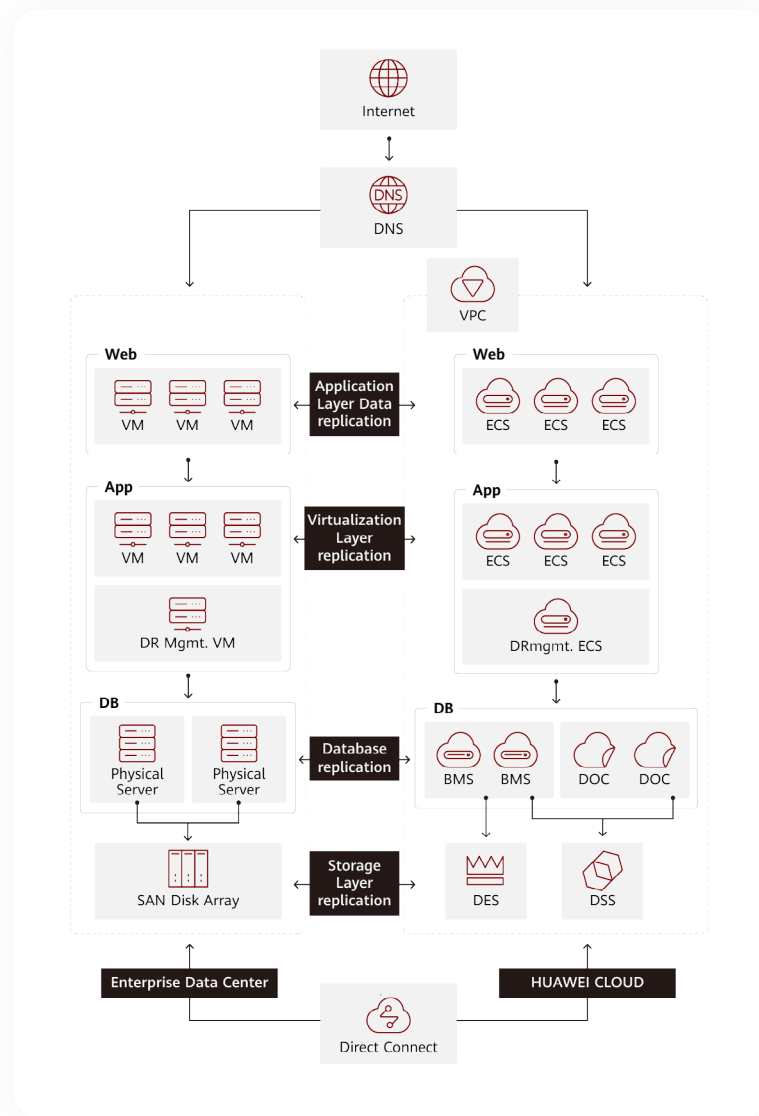
High reliability -- Provides VM-level DR protection across AZs (RPO = 0) and hour-level RTO to meet tier-5 DR standards. Quickly recover services if the production site goes down, minimizing service interruptions and helping eliminate data loss.

Top 5 reasons for choosing Huawei Cloud Backup and Disaster Recovery

Achieve disaster recovery with secure, offsite cloud backup

Cloud backup and DR uses the cloud to automatically transfer data offsite for disaster recovery. Your backup data is immediately off-premises only minutes after being updated. No matter what type of disaster strikes your organisation, you can restore data from moments before the disaster occurred.

Free yourself from manual and complex tape backup tasks

Besides freeing IT staff from manual chores, these solutions also provide IT with Web-based tools to manage and monitor all aspects of their server data protection. In addition, these solutions remove the burden of managing both a backup infrastructure and data protection process.

Get predictable costs and simpler budgeting

Cloud backup services are uniquely suited to address server data protection, including predictable monthly budgeting, and costs. The service is completely automated, providing immediate backup of server data to an offsite location, and leveraging the Huawei Cloud infrastructure and expertise. This also frees IT personnel to become better aligned with business goals.

Minimise the risk and cost of downtime

This kind of "hands off, lights out" comprehensive and continuous backup means that, in the event of a disruption or disaster, you can restore data from a point in time just moments before the interruption, rather than from the previous evening (or earlier). It dramatically improves your ability to meet Recovery Point Objectives and reduces the cost of downtime.

Take advantage of the service provider's expertise and resources

Huawei Cloud bears the cost of scalable resources and updates technologies as disk-based backup evolves. This option gives your organisation flexibility as it grows and changes—another key to remaining nimble in a competitive environment. The best cloud server backup services provide trusted, proven experience in protecting customer data in the cloud. These services give you peace of mind that your data is protected in secure data centres.
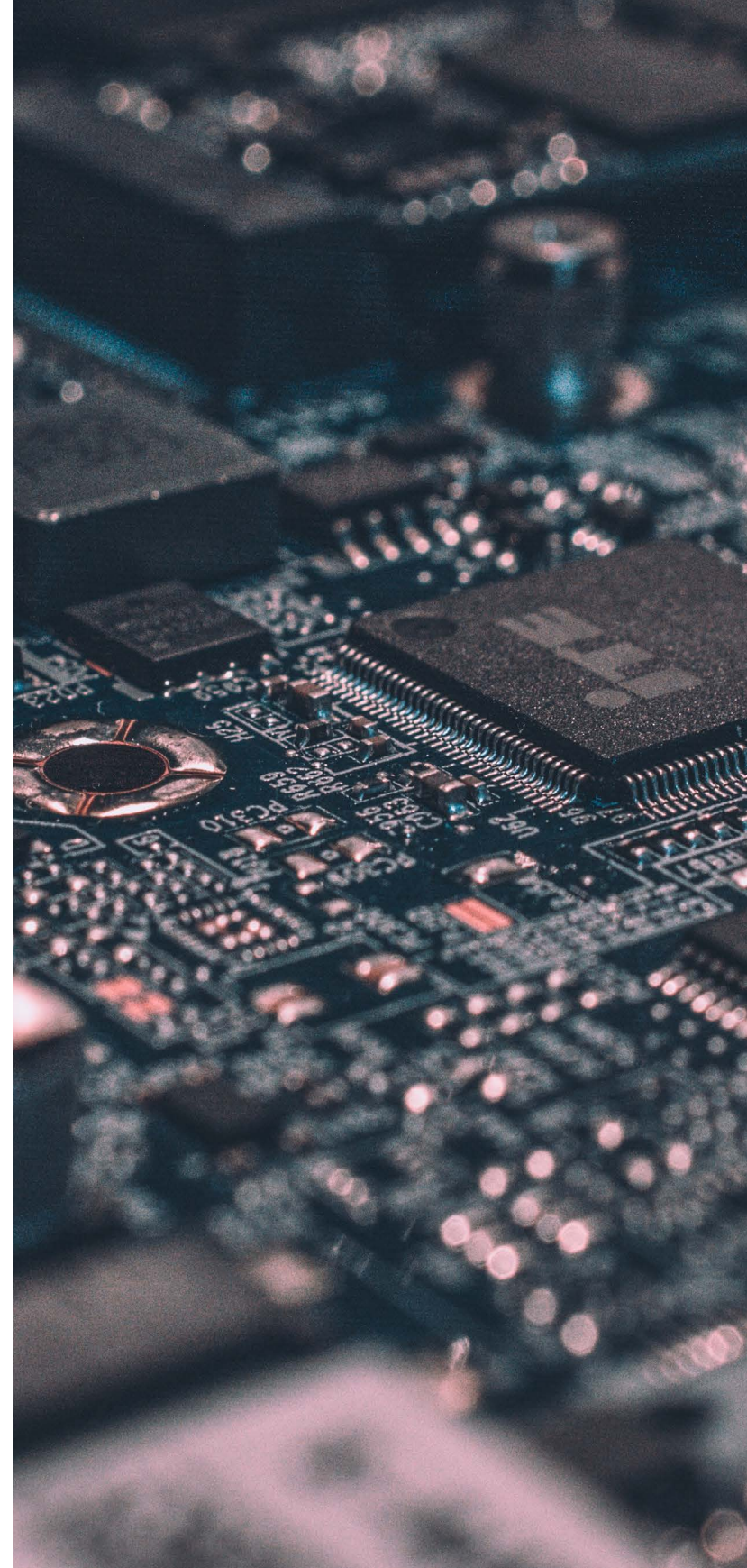
Common Customer Objections

1. **What's the difference between Disaster recovery and Cloud Backup?**

   Different Purposes
   Backup is the process of making an extra copy (or multiple copies) of data. You back up data to protect it. Disaster recovery, on the other hand, refers to the plan and processes for quickly re-establishing access to applications, data, and IT resources after an outage.

   Distinct RTO and RPO
   Backups have longer RTOs and RPOs, and thus are not suitable for business-critical data that you need quickly restored after a disaster. Disaster recovery, on the other hand, implies replicating your critical VMs with the aim of quickly performing failover if necessary, which means that DR can accommodate much shorter RTOs and RPOs.

2. **What is the role of deduplication and compression in cloud backup?**

   To save on cloud storage costs, cloud backup software should include comprehensive deduplication and compression. The goal is to reduce the amount of data that is migrated from on-premises to the cloud. Good deduplication and compression practices reduces the amount of data that is sent over the wire and subsequently stored in the cloud, saving on overall costs, including time, cloud egress charges and network bandwidth when moving to the cloud or moving data between clouds.

3. **What backup schedule should I select?**

   Define a backup schedule frequency that aligns to your recovery point objective (RPO). Define a backup time when your workload is under the least amount of load and when user impact can be reduced. Create a point-in-time snapshot whenever you are going to make a significant change to your workload.

4. **Is my backup data protected?**

   Typically, data is encrypted with the highest encryption technology available and password protected for double protection. Keep this information safe as you will need it to restore the data when the time comes.

5. **Where is my data actually stored?**

   Cloud computing involves taking data from your own personal little space and placing it in a special section of the internet. Nothing will be stored in your local hard drive, but you can still access this data from any location using any device at any time. Although this data is stored virtually for you, it still needs to be physically stored on a hard drive somewhere. Companies that offer cloud-based services have huge server farms, which are essentially enormous, cavernous warehouses filled with servers that are running 24 hours a day, seven days a week, and 365 days a year.

CDN & OBS
Traffic-Based Solution

Everything as a Service

What is CDN & OBS?

Content Delivery Network (CDN) is an intelligent virtual network built on top of an existing Internet infrastructure. Using CDN, origin content can be cached on nodes closer to users so content can load faster. CDN speeds impact up site response and improves site availability, breaking through the bottlenecks caused by low bandwidth, heavy user access traffic, and uneven distribution of edge nodes. In addition, Object Storage Service (OBS) provides stable, secure, efficient, and easy-to-use cloud storage that lets you store virtually any volume of unstructured data in any format and access it from anywhere using REST APIs.

Why Huawei's CDN&OBS Traffic-Based Solutions?

Solution 1: Pseudo-source site solution (OBS+CDN)
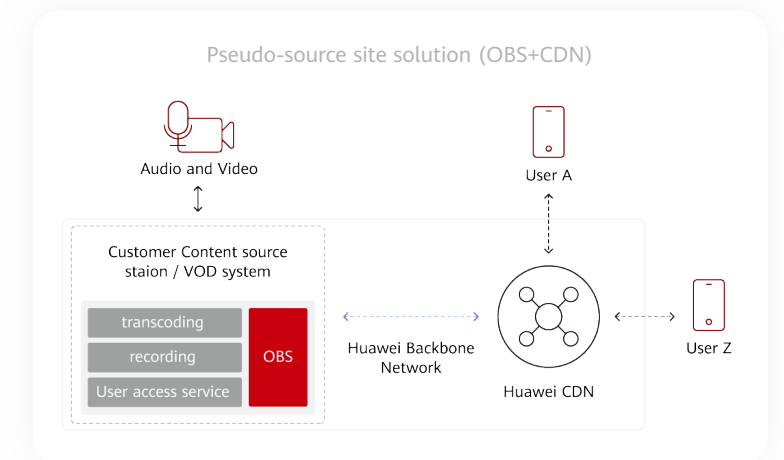
Who is the Target Audience?

1. Huawei CDN is used when the customer CDN is over 500 GB/s. The cost is then greatly reduced.
2. Self-built source sites or peer vendors' cloud, without a swap plan.
3. The bandwidth of the source site is limited.
4. There are a large number of content retrieval requests (about 50 Gbit/s for reference).
5. Low-cost private lines exist between Huawei Cloud regions and customer data centers.
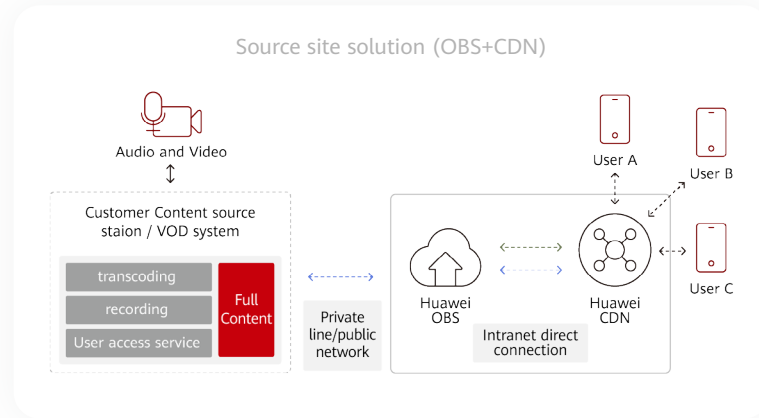
Benefits of this solution:

1. **Stable:** In peak hours, the pseudo-source can be used to distribute traffic to reduce the pressure of the source station.
2. **Cost reduction:** The discount for CDN->OBS-and-region intranet retrieval is low, reducing the overall bandwidth cost (OBS Flexible Lifecycle Management and Storage Cost Control)
3. **Latency reduction:** The network path is shorter and the latency is shorter. The first byte from CDN to OBS is 15ms.
4. **Security:** When the source site is faulty, the CDN can still recover the source site.

Our Competitive Advantages:

1. **OBS advantages:** OBS self-developed EC storage for better processing performance and data recovery;
2. **CDN Advantages:** It has wider node coverage and better performance.
3. **Cost advantages of the overall solution:** Focus on existing customers and provide special quotations for price-sensitive customers.

Pseudo-source site solution (OBS+CDN)

Audio and Video · User A · Customer Content source staion / VOD system · transcoding · recording · OBS · User access service · Huawei Backbone Network · Huawei CDN · User Z

Solution 2: Source site solution (OBS+CDN)

Source site solution (OBS+CDN)

Who is the Target Audience?

1. Self-built source sites or peer vendors' clouds can be migrated.
2. Those that use Huawei CDN
3. Requirements for cost reduction and O&M distress of active sites.
4. Customers that are interested in high-level capabilities of the source site, or those that wish to reduce development investment or migrate upper-layer services to Huawei.

Benefits of this solution:

1. **Stability:** In peak hours, the pseudo-source can be used to distribute traffic to reduce the pressure of the source station.
2. **Cost reduction:** The discount for CDN->OBS-and-region intranet retrieval is low, thus reducing the overall bandwidth cost. OBS Flexible Lifecycle Management and Storage Cost Control.
3. **Latency reduction:** The network path is shorter and the latency is shorter, the first byte from CDN to OBS is 15ms.
4. **Security:** When the source site is faulty, the CDN can still recover the source site.

Our Competitive Advantages:

1. **OBS advantages:** OBS self-developed EC storage, better processing performance and data recovery;
2. **CDN Advantages:** Wider node coverage and better performance.
3. **Cost advantages of the overall solution:** Focus on existing customers and provide special quotations for price-sensitive customers.

Solution Scenarios for your Customers

1. If the customer uses traditional CDN distribution, guide customers to use OBS+CDN to reduce costs.
2. If the customer uses competitors' storage and CDN, guide the customer to migrate to Huawei Cloud or implement multi-cloud solutions.

Why Huawei Cloud CDN Acceleration?

Website Acceleration
Websites with acceleration requirements, including portal websites, e-commerce platforms, information apps, and UGC applications (user-original content). The CDN network can provide good acceleration services for static content under acceleration domain names throughout the country.

Download Acceleration
This document is applicable to websites, download tools, game clients, and app stores that provide file download services through HTTP/HTTPS. It also accelerates real-time software update services, including app update and mobile game update, reducing user waiting time and improving user conversion rate.

VOD acceleration
It's applicable to customers who provide audio and video on demand (VOD) services. For example, online education websites, online video sharing websites, Internet TV on-demand platforms and music video on-demand apps.

The CDN VOD acceleration provides fast, stable and secure VOD acceleration services.

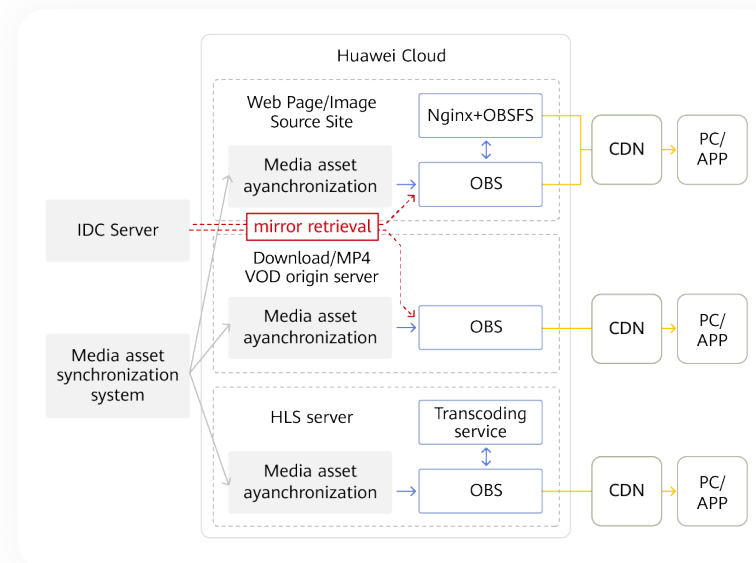## Our Target Audience

| Media | E-commerce | Social Recreation | Gaming Customers |

Highlight: A Customer Use Case

Customer: TV station (new media origin servers on the cloud)

Challenges faced by the Customer

1. A large number of IDCs, storage arrays, and physical machines are used, resulting in high costs and inconvenient management and O&M.
2. The cost and difficulty of NAS storage capacity expansion are high, and cannot adapt to the increase of data volume.
3. Service continuity depends on the Nginx service. Dedicated personnel are required to maintain software and hardware.
4. Service applications such as image, text, and download use the NFS protocol. Therefore, the interconnection with object storage needs to be adapted.
5. The transcoding service processing capability is limited and cannot cope with unexpected service requirements.

Benefits from Our Solution

1. OBS provides POSIX APIs to support ECS direct mounting for reading and writing.
2. Data+Video provide easy-to-use transcoding services.
3. PB-level storage data migration solutions are customized and the mirror retrieval feature facilitates seamless incremental data migration.
4. OBS connects to multiple third-party CDNs, allowing flexible access traffic scheduling.

Network Convergence Solution (K-Y-O-N)

Everything as a Service

What is KYON?

Huawei Cloud KYON enterprise-level cloud network solution is the first in the industry to put forward the new concept of "Keep Your Own Network." This includes L2CG, private NAT gateway, Dedicated ELB-IP target and VPC endpoint. Huawei Cloud KYON solution focuses on solving complex networking problems related to cloud migration. It does this by building a simplified and high-speed cloud migration path, facilitating simplified planning, smooth migration, and seamless convergence, making it the first choice for enterprises to migrate to the cloud.
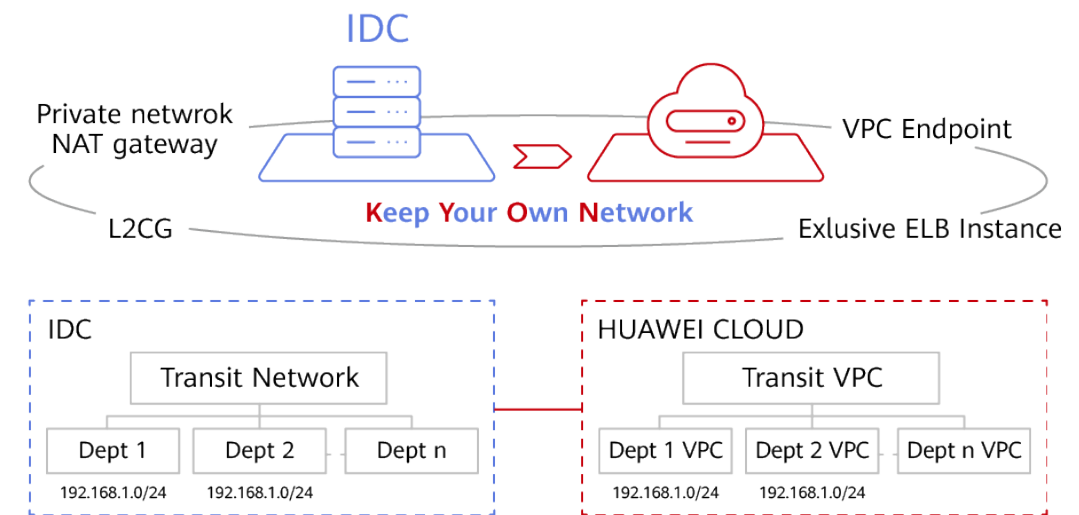
Scenario-based Support

Hierarchical Network Planning
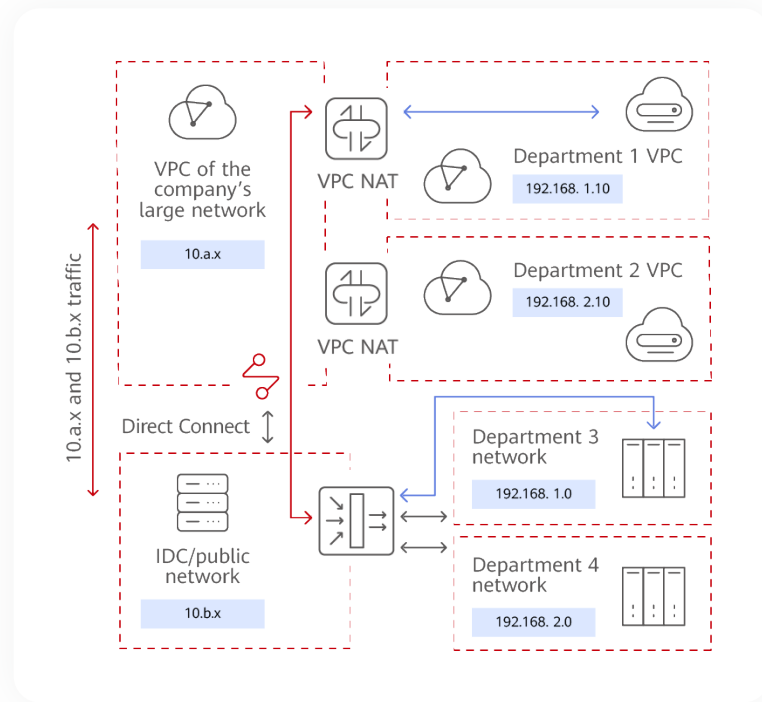
Challenge:

- The internal network of an enterprise is not planned in a unified manner.
- Different departments have different network segments.
- The network segments of multiple departments overlap.
- After the migration to the cloud, some networks can't adjust and after migration, the overlapping network must support mutual communication.

Solution:

Huawei Cloud provides private NAT gateway which supports private network IP address mapping, so an IDC network segment does not need to change when migrating to cloud.

Agile service migration

Challenge:

- Direct Connect/VPN is used to connect off-cloud IDCs and virtual networks on the cloud.
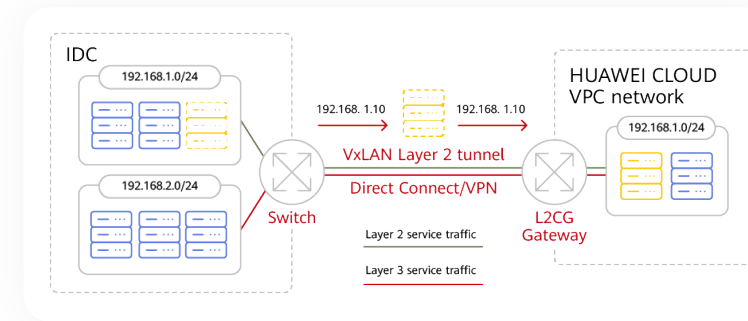- IP addresses on the same network segment can communicate with each other and network segments can communicate with each other to ensure service continuity.
- Computing and storage resources are gradually migrated to the cloud in batches.

Solution:

Huawei provides L2CG to support both in- and off-cloud layer 2 networks, simplifying network planning and achieving migration through a single IP address in and off the cloud.

Seamless convergence and load balancing on and off the cloud
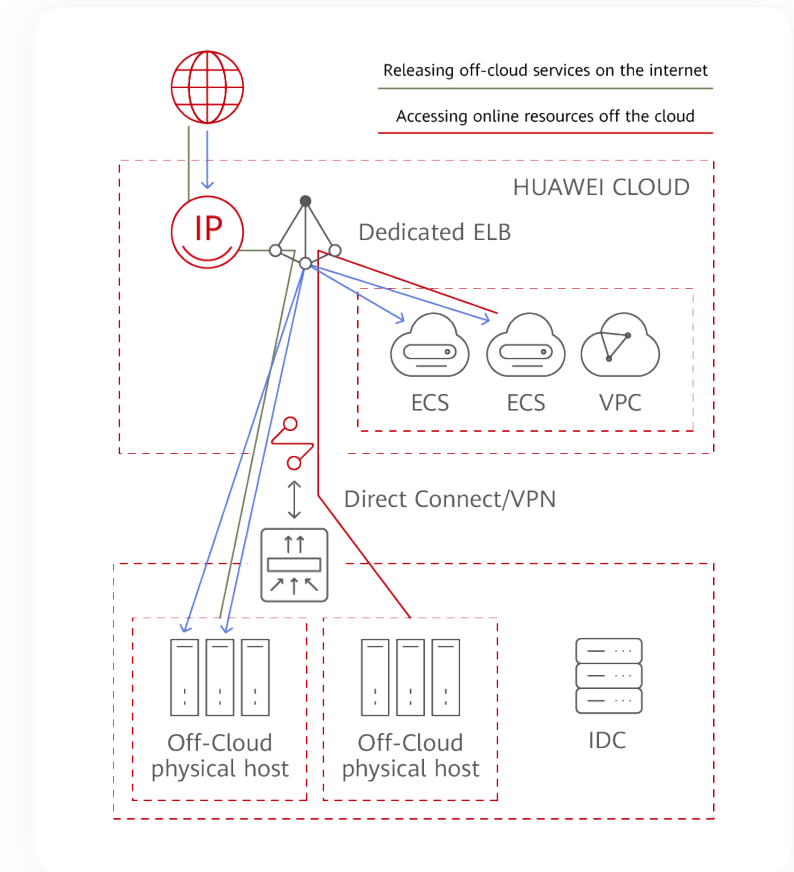
Challenge:

- In the enterprise, inventory servers have been deployed in the original IDC equipment room.
- After migration, elastic resources on the cloud need to be used to build a unified service resource pool with off-cloud physical hosts with off-cloud services being released externally through the public network egress on the public cloud. This solution is usually used in marketing activities for e-commerce.

Solution:

The dedicated ELB supports the function of specifying an off-cloud IP address as a load balancing host group to resolve service convergence within in- and off-cloud scenarios.

7. Online Education Solution

Everything as a Service

Why Online Education

In the era of globalization, education is becoming increasingly open and internationalized. Governments are making unprecedented investments in education and technology. The world changes in the blink of an eye. Quality of education determines whether you can seize future opportunities.

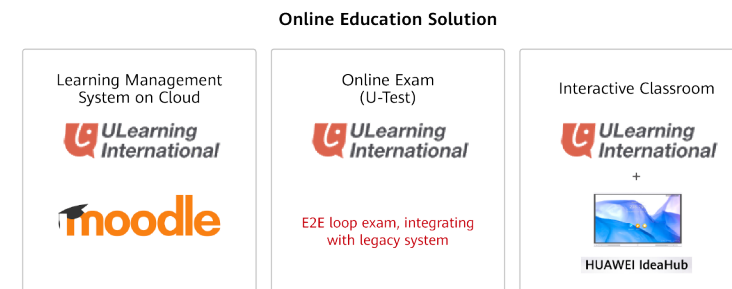The combination of AI and big data with online education will be used throughout the learning process. Students and parents can quickly find the courses they want on the platform, and the use of AI makes learning easier. AI will play a significant role, from checking homework to voice identification. Convenient information query and simple voice communication mean a better learning experience for the students. In the cloud+ era, online education will experience a swift development. The online education solution encompasses remote collaboration, anti-cheating, a full stack of features for smart learning and teaching which incorporates intelligent handwriting recognition, HD projection, video conferencing and the office AppGallery to provide a best-in class video conferencing.

What is our Ulearning solution?

Online Education Solution

Learning Management System on Cloud	Online Exam (U-Test)	Interactive Classroom
ULearning International	**ULearning International**	**ULearning International** +
moodle	E2E loop exam, integrating with legacy system	HUAWEI IdeaHub

Learning Management System on the Cloud

After the epidemic, online education brought more end users and services, which imposes higher requirements on concurrency and latency. The system carries more services, facilitating the need for cloud providers to provide a better service and support.

Online Exam (U-Test)

For exams, ULearning's U-Test covers the entire loop of the exam process and implementation. This includes exam management, exam organizing, exam proctoring, grading and analytics. The U-Test system supports multiple devices, auto-grading of exam papers, result analysis, and also features auto-generation of exam papers, random exams and other anti-cheating mechanisms.

Interactive Classroom (ULearning Smart Classroom + HUAWEI IDEAHUB)

Makes classroom teaching more efficient, interactive, engaging and enables knowledge sharing. Teachers are able to fully utilize the functions of intelligent big screen of IDEAHUB (e.g. touch screen, camera), seamlessly integrate with classroom teaching scenarios, enable student engagement and peer sharing. This allows classroom teaching to become highly efficient and engaging.

Who are your Target Audience?

1. **Customers with LMS but are not cloud-based:** Promote LMS cloud-based migration and U-Test
2. **Customers with cloud-based LMS:** Promote online U-Test solution
3. **Customers without LMS:** Promote ULearning full LMS Solution.
4. **Other Customers to focus on:**
   • Public University
   • TVETs
   • Private Edu Group
   • Enterprise internal training

Challenges faced by your Customers

Migrating LMS to the Cloud - Migrating On-Premise to the Cloud:

- Due to aging equipment in the equipment room, power failure, and insufficient IT maintenance personnel, the LMS system is often indispensable which leads to a large number of complaints.
- On-premise LMSs cannot be expanded in time, resource monitoring is not timely and comprehensive and necessary disaster recovery and backup are not required.

Cloud-based Ulearning LMS:

- Lack of LMS in schools, lack of online platforms for teachers and students, and a lack of effective teaching management and recording platforms.
- Lack of IT personnel that are dedicated to maintain the LMS software system deployed (offline).

Cloud-based U-test (Moodle)

- Moodle does not have a functional online exam and proctor module to prevent cheating.
- Online exams have become a trend. According to the online exams on the Moodle platform, the fairness of the exams is questioned due to the above shortcomings.

Why Huawei Cloud?

Migrating LMS to the Cloud - Migrating On-Premise to the Cloud:

- Huawei Cloud-based Moodle features high reliability, high security, comprehensive monitoring, and complete backup and disaster recovery capabilities, thereby reducing maintenance costs for IT personnel. Huawei Cloud have local service teams to support you.
- Huawei Cloud-based Moodle, can meet flexible service volume expansion requirements, evolve to containerization and microservices and can determine the technical route independently.

Cloud-based Ulearning LMS:

- One-stop LMS platform including exam modules, virtual classrooms and learning management.
- SaaS-based software platform, requiring only account management and distribution without IT personnel maintenance.

Cloud-based U-test:

- E2E examination and monitoring functions and the online question library is powerful.
- Key functions such as facial recognition, exam cheating record, browser locking, and exam analysis and BI display.

  Integrates with existing Moodle platform, allowing teachers and students to simply log in from the familiar portal.

A Successful Case Study

Unizulu University

Challenges faced by the University

- The lack of equipment and inferior power system created problems for online learning. In addition, the power supply in South Africa is often limited. As a result, IT applications in South Africa are often unavailable.
- There is no unified platform to monitor services.
- There is an online education Moodle system, but there are some limitations regarding cheating-proof test systems, which results in the fairness being questioned.

Our Development Strategy

- Use the CIO to push the learning management software Moodle to the cloud.
- This leads to the director of the education department pushing for the online test application U-Test.
- After making breakthroughs in online education, successfully guide light applications such as the official website and e-Library to the cloud.
- After light applications are migrated to the cloud, push heavy applications such as CCTV and ERP to the cloud.

  Finally, fully migrate to the cloud.

Benefits of the Solution

- Cloud-based Moodle, high reliability, high security, all-round monitoring and zero faults.
- U-Test, use Moodle to log in to the system without account management, preventing cheating and paperless exams.
- Reliable/Visualized cloud environment as a platform for Internet-facing services.

Common Customer Objections

1. **What's your solutions basic model?**

   Our Basic Hybrid Class Teaching Mode is Smart Boards + ULMS + Multi-Device Access.

# Huawei Cloud, Video Surveillance Solution

Everything as a Service

An Overview of our Architecture

The VMS cloud platform is composed of different software function modules including central management, DB, streaming media, storage management, video access GW and so on. It's deployed in Huawei public cloud based on rich of IaaS/PaaS service such as ECS, EVS, OBS, VPC, EIP etc.
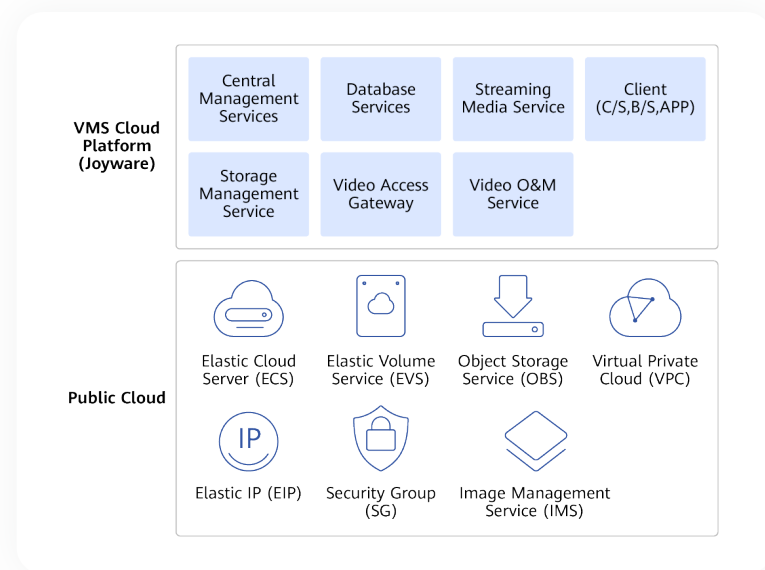
What is our Video Surveillance Solution?
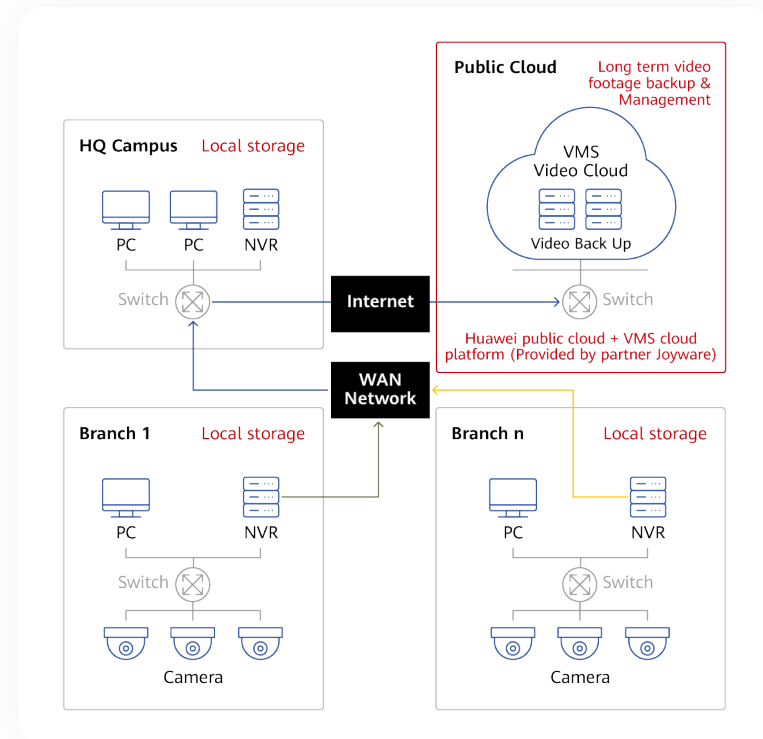
The Branch Configuration

1. Each branch will deploy NVR (Network video recorder) as edge storage node, store the video footage of the cameras. If internet breakdown occurs, footage can be stored locally in NVR.
2. The NVR will send video streams through the WAN network to the HQ and from the HQ directly to the Cloud Storage in the Public Cloud for backup purposes.

The DC and HQ Campus Configuration

The HQ campus will connect to the Public Cloud through Internet Connectivity.
PC can be used for checking live feed and footage from the HQ campus.

The Video Cloud

The video cloud is a Public Cloud, which will store the video streams of all the branch cameras via HQ.

Who are your Target Audience?

- Customers who need to archive and store recordings on the cloud for an extended period of time
- Customer requires a unified video management platform to manage all cameras and recordings, and expect the platform to provide B/S, C/S, Mobile Application software.

What are the key functions required by your video surveillance platform?

Modular	Feature	Feature description
Login and User Management	Login	Login to platform by C/S client or APP, support auto login.
System Configuration	General configuration	You can set general configurations such as cloud URL, language, alarm in general configurations.
	Local configuration	Configure parametes such as video download path, picture download path.
Real-time Video	Device Search	Platform support search device in camera trees.
	Split-screen Display	Video can be displayed in split-screen mode. You can select one of the screens to directly display the previewed video.
	Real-time video operation	For real-time video, it supports operations such as start or close video, full screen display, single screen display and so on.
Video Playback	Regular playback	Users can search and play recordings based on date, time segment, and recording type of the playback channel. Multiple channels can be played at the same time.
	Video playback opertation	For video playback, it supports operations such as start or close video, full screen display, single screen display and so on.
	Video Download	Platform support download video. Multiple recording download tasks can be concurrently performed.
Video Patrol	Video Patrol Plan	Allows users to add video patrol in patrol plam, Enable and disable patrol plan.
Platform Management	User Management	The system can manage registration, permission confirguration, and identity authentication of all users on the platform.
	Device Management	Registers, authenticates, and manages devices on the platform.
	Log Query	Allows users to query and export operation logs and alarm logs.

Intelligent Analysis Functionality (available as an option)

Huawei Cloud EI algorithms are used to perform cloud-side video analysis, such as vehicle traffic statistics and smoke detection.

Our Target Audience

1. Government department
2. Bank
3. Campus
4. Large enterprises

Why Huawei Cloud?

Open: The camera, video platform, and public cloud components are optional to meet our customer requirements. We offer an open platform and interfaces for evolution of your solution

Security: We provides end-to-end security for cameras, network devices, video analysis platforms, video management platforms, and video storage cloud.

TCO Reduction: We offer a cost effective, on-demand storage capacity expansion and reduced one-time investment. We also offer the option for live-network cameras are reused to reduce costs.

Artificial Intelligent Evolution: All cameras, video analysis, and cloud platforms, provide end-to-end intelligence capabilities.

Medium- and long-term video storage on the cloud: Our solution offers low-resolution code stream storage on cloud. This converts the storage mode from a CAPEX to OPEX spend. The I/O performance of OBS storage on the cloud is hassle-free, and unlimited capacity expansion is required. All videos on the cloud can be replayed at any time. OBS for long-term videos over X years can be archived at low cost.

A Successful Case Study

XXX Bank case (confidential)

Challenges faced by the Customer:

- There is no unified video management platform to manage all cameras and video recordings.
- Only local NVR video storage is available. Data is prone to damage, tampering, and loss.
- The CBN proposed clear regulations to store five years of long-term video, ensuring security and reliability of surveillance footage to prevent bank robberies and attacks.

Key elements of our Project Solution?

- Provide end-to-end security for cameras, local storage, video analysis platform, video management platform and video cloud storage.
- Use the public cloud to expand storage capacity on demand and quickly deploy new services.
- Reuse existing cameras to protect investment costs and achieve cost-effectiveness.

Benefits realised by the Customer

- Huawei Cloud storage for long-term videos reduces CAPEX.
- Unified video platform for unified device management and maintenance.
- Existing cameras can be reused and the platform supports evolution to digital cameras.

Common Customer Objections

1. Are there any restrictions on the brands of cameras and NVRs for this solution?

If our customer requires offline NVRs to connect to our cloud platform, The NVRs must support GB28181 protocol. If the customer requires offline cameras to connect to our cloud platform directly, the cameras must support GB28181 protocol.

2. What are the network requirements for the customer?

Formula of bandwidth = (Video stream bitrate* cameras) / Bandwidth Effectivity, default bandwidth effectivity is 70%.

Cloud Native Solution

Everything as a Service

Solution Overview

With the maturity of cloud native technologies and the upgrading of market demands, the development of cloud computing has entered a new stage. Cloud-Native technologies, including containerization, microservices, and dynamic orchestration, are becoming an important driving force for enabling business innovation.

Cloud Native solutions on Huawei Cloud

The foundation of the unified and integrated software and hardware architecture for cloud native solutions on Huawei Cloud is called QianTian, which can provide high performance and high utilization to optimise cost reduction. Based on Qintian, we have a new form of cloud container engine called CCE/CCE Turno.

For the microservice governance (due to non-intrusive and language independent service) mesh is a good choice (ASM which is based on Istio).

For the big data and AI scenario, high efficient scheduling is needed, Huawei cloud has Volcano to improve the scheduling efficiency by more than 30%.

With a multi-cloud scenario, you may need a unified orchestration and management to implement cross -cloud application deployment and Disaster Recovery, which on HuaweiCloud, MCP is the good choice.
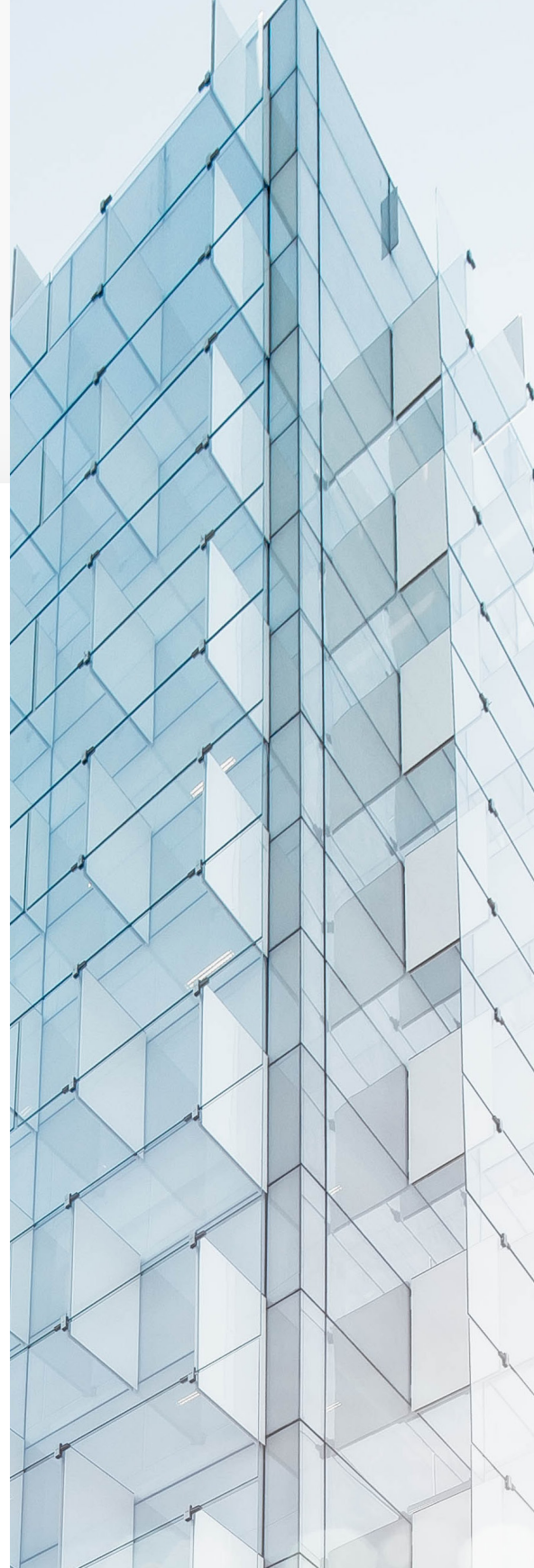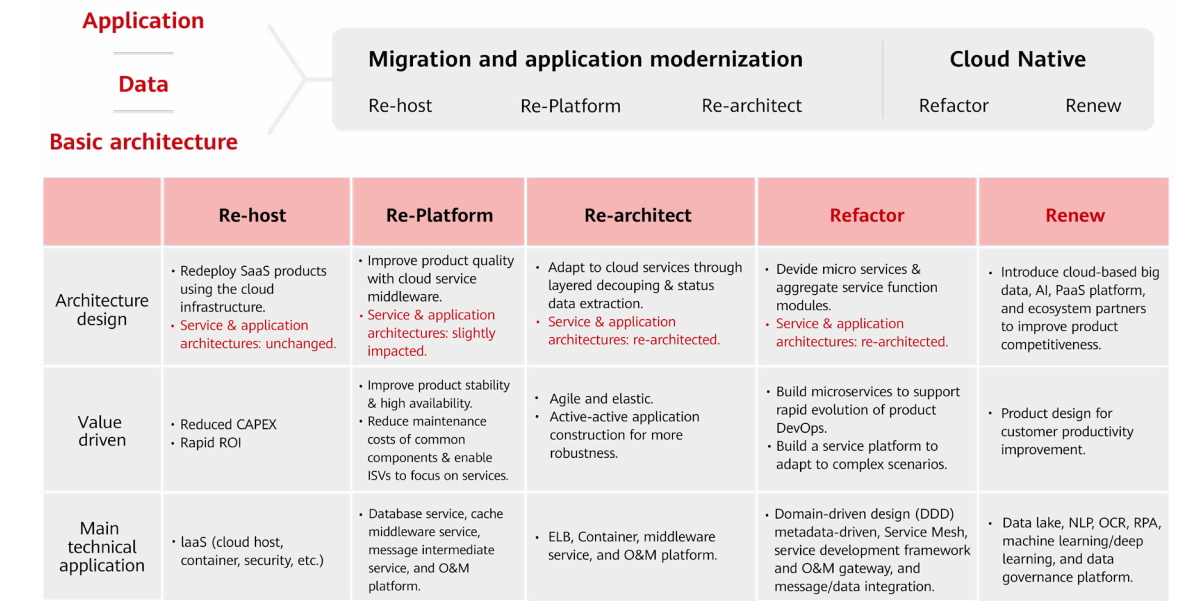
Vehicle Scenario	Bare metal server	Microservice	Big data & AI	Edge	AR/VR

Basic Product	SWR	AOS	ASM	MCP	AOM
	CCE/CCE Turbo	CCI		CCE@HCS	IEF

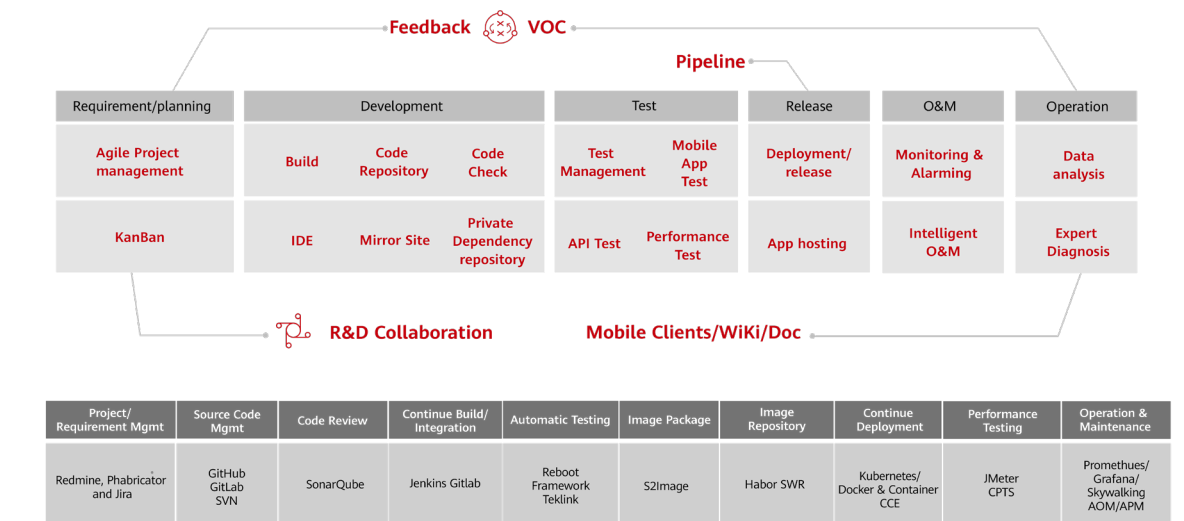| Technical Platform	Cloud-native technology platform **Vessel**	→	Batch computing engine **Volcano**	Edge container **KubeEdge**

Infrastructure	Computing	Storage	Network
	Integrated software and hardware architecture of HUAWEI CLOUD		

As depicted in below figure, this is a typical roadmap of enterprise's technical architecture cloud transformation. During refactoring phase, it is strongly recommended to decouple enterprise applications using containerization and microservices to achieve architecture modernization. In addition, domaindriven- design (which is known as DDD) can be introduced to split services with complex scenarios.

Application
Data
Basic architecture

Migration and application modernization			Cloud Native	
Re-host	Re-Platform	Re-architect	Refactor	Renew

	Re-host	Re-Platform	Re-architect	Refactor	Renew
Architecture design	• Redeploy SaaS products using the cloud infrastructure. • Service & application architectures: unchanged.	• Improve product quality with cloud service middleware. • Service & application architectures: slightly impacted.	• Adapt to cloud services through layered decouping & status data extraction. • Service & application architectures: re-architected.	• Devide micro services & aggregate service function modules. • Service & application architectures: re-architected.	• Introduce cloud-based big data, AI, PaaS platform, and ecosystem partners to improve product competitiveness.
Value driven	• Reduced CAPEX • Rapid ROI	• Improve product stability & high availability. • Reduce maintenance costs of common components & enable ISVs to focus on services.	• Agile and elastic. • Active-active application construction for more robustness.	• Build microservices to support rapid evolution of product DevOps. • Build a service platform to adapt to complex scenarios.	• Product design for customer productivity improvement.
Main technical application	• IaaS (cloud host, container, security, etc.)	• Database service, cache middleware service, message intermediate service, and O&M platform.	• ELB, Container, middleware service, and O&M platform.	• Domain-driven design (DDD) metadata-driven, Service Mesh, service development framework and O&M gateway, and message/data integration.	• Data lake, NLP, OCR, RPA, machine learning/deep learning, and data governance platform.

DevSecOps is another key point for application architecture modernization, it builds an end-to-end product R&D process and tool chain, based on agility and security to improve product R&D efficiency.

Feedback **VOC**
Pipeline

Requirement/planning	Development			Test		Release	O&M	Operation
Agile Project management	Build	Code Repository	Code Check	Test Management	Mobile App Test	Deployment/ release	Monitoring & Alarming	Data analysis
KanBan	IDE	Mirror Site	Private Dependency repository	API Test	Performance Test	App hosting	Intelligent O&M	Expert Diagnosis

R&D Collaboration **Mobile Clients/WiKi/Doc**

Project/ Requirement Mgmt	Source Code Mgmt	Code Review	Continue Build/ Integration	Automatic Testing	Image Package	Image Repository	Continue Deployment	Performance Testing	Operation & Maintenance
Redmine, Phabricator and Jira	GitHub GitLab SVN	SonarQube	Jenkins Gitlab	Reboot Framework Teklink	S2Image	Habor SWR	Kubernetes/ Docker & Container CCE	JMeter CPTS	Promethues/ Grafana/ Skywalking AOM/APM

The following phases need to be considered

a. **Requirement planning:** agile project management and dashboard collaboration

b. **Development phase:** compilation and building, code repository, code check, IDE development, and mirror image station

c. **Tests phase:** test management, interface test, and performance test.

d. **Release phase:** deployment and release configuration, application hosting.

e. **O&M:** includes monitoring alarms.

f. **Operations:** data analysis, expert diagnosis.

In addition, DevSecOps focuses on building flow line on development, testing, and release to implement automatic continuous integration and deployment of developed code. The R&D collaboration tool platform and user feedback can be used throughout the whole product lifecycle.
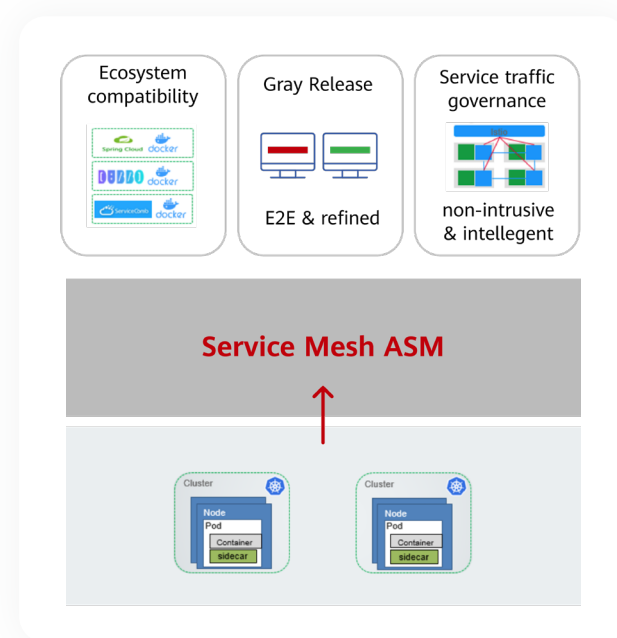
Why Huawei Cloud?

1. We cloud native foundation for the industries to enable enterprise to be born on the cloud, grow on the cloud, and collaborate with existing capabilities to accelerate intelligent upgrade.

2. Our distributed cloud: Extends cloud infrastructure and services to the locations required by services through rich product portfolios.

3. Leading Optimus architecture: The unique Optimus architecture provides optimal cost-effective cloud services through software and hardware collaboration and intelligent scheduling.

4. World-class application modernization: agile application development and delivery with efficiency.

5. Efficient data enablement: innovative implementation of storage and computing for elastic scaling.
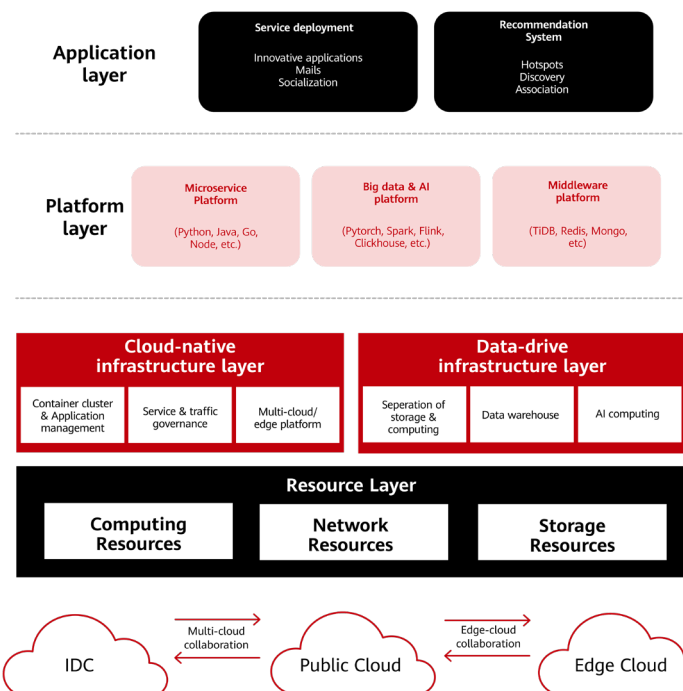
Our Customer Value Proposition

ASM – native service mesh, non-intrusive cloud-native release and governance.

Huawei Cloud ASM is an enhancement base on open-source Istio, which is Non-Intrusive and Language-independent. There are some key features, like easy to use, support canary release processes which support One-stop health, performance, and traffic monitoring and visualization. We have many enhancements for optimal reliability and performance, the performance of the data plane (with improved more than 30% compare to open source version). In addition, the latency is reduced to less than 1ms.

A Success Story

Huawei Cloud ASM is an enhancement base on open-source Istio, which SHAREit and Huawei Cloud, providing global users with high-quality personalized contents

Shareit is one of the biggest customer in Asia-Pacific of Huawei cloud. They have successfully migrated their workload from another large, hyperscaler to Huawei Cloud. We supported them with containerization, which highly improved their resource utilization and optimized cost reduction.

Huawei Professional Services team helped them to implement container technologies. We also provided technical training, architecture design guidance, system development guidance and system online guidance.

Contact us: huaweicloudsa@huawei.com

Follow us:

HUAWEI CLOUD