

# **Understand the Flexible Engine features**

June 2020



**Business  
Services**

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## 1.1 Flexible Engine Compute services

### 1.1.1 Elastic Cloud Server



Elastic Cloud Servers (ECS) are Virtual Machines (VM). This service, available in all Availability Zones, offers self-service virtual machines. The User can start, stop, resize VMs using the Flexible Engine Console or using the ECS API.

Cloud Servers use a system disk based on the Elastic Volume Service (EVS), and for some flavors a local disk is also included. The ECS is invoiced:

- when it is turned on for flavors that do not include a local disk,
- including when it is turned off and until it is completely deleted for flavors including a local disk.

The technical specifications of each instance are available in the Flexible Engine Console.

The invoicing principles are specified in the Price List.

### 1.1.2 Baremetals servers

A BMS (Bare Metal Server) is a physical server that can be subscribed and launched from the Flexible Engine console. This server is entirely dedicated to the Client in order to install key applications or to optimize Oracle database licenses for example. The client can combine this physical server with other Flexible Engine services such as a virtual private cloud (VPC), OS images (IMS), storage or network. With a dual network card (Multi-NIC), the BMS can connect to two networks.

### 1.1.3 Reserved instances

The “Reserved Instances” Feature allows the User to subscribe to improved tariff plans for the ECS service depending on a duration commitment of use of 1 year, 2 years, or 3 years and on the payment of a one-time Charge, if any. With a Reserved Instances plan, the Charge for the ECS service becomes a monthly recurring Charge for the duration of the plan and no longer a charge based on usage.

The User can mix subscription plans for Reserved Instances for a part of the User's ECS service, with on-demand usage of the ECS service for others. Reserved instances are subscribed for a given flavor and a given Region. Before subscribing to a Reserved Instance, you must check the availability of the cloud resource in the Flexible Engine console that will physically allocate them. Each month, the most consuming VM corresponding to the reserved flavor in the concerned Region will be including in the monthly recurring charge, while the other VM will be charged according to usage.

At the end of the commitment period, usage based billing shall resume.

### 1.1.4 VM Auto-Recovery

In the event of a server failure, the Virtual Machines which have been configured with the VM auto-recovery Feature by the User, will be automatically migrated to another computing server host. The new VM will be a clone of the failed VM.

Activation of this Feature is done using the Cloud Eye Service monitoring console, and is limited to compatible flavors.

### 1.1.5 Auto-Scaling

Auto Scaling (AS) uses preset AS policies to automatically scale service resources up and down based on service requirements. The User can configure scheduled and periodic scaling tasks, monitoring policies, and AS group capacity thresholds to enable AS to automatically increase or decrease the number of Elastic Cloud Server (ECS) instances.

A flexible web-based self-service management console is provided for the User to manage and control the AS service.

In addition, AS can work with Elastic Load Balance (ELB) to automatically scale load balancers members.

If the User need to deploy a distributed application system on a cloud platform, the User can use AS to follow the demand curve for the User's system closely by planning scaling activities and configuring automatic resource adjustment based on monitoring data.

### 1.1.6 Image Management Service



An image is used to create ECSs and consists of a preinstalled public or private operating system and, if any, applications. IMS allows the User to create, edit, upload, and delete images in self-service mode.

The User can use the Flexible Engine console to provision ECSs using images, either one by one or in batches.

IMS allows the User to:

- Create ECSs using public images available in a Region with preinstalled Software.
- Create a private image using an existing ECS.
- Query details about a private image.
- Delete an existing private image.
- Upload an image file and register it as a private image.
- Export a private image in a specified format.
- Share a private image with other users.

The list of public images is available on the Flexible Engine Console and is subject to evolution.

In case the application images are provided by a provider different from Orange Business Services, only the provider is accountable for the applications Features. Support on these applications is ensured solely by the provider, a specific support contract must be bought by the Customer from the provider. Some images are provided in BYOL (Bring Your Own License) mode in which case the Customer should take care of the licensing. The providers and licensing modes for each image are indicated on the Flexible Engine Console.

The User can import private images towards the Public Cloud. Verifying the proper operation of private images is under the responsibility of the Customer.

The private images that can be exported include those that the User has uploaded to the system or established from the ECSs created from the free public images. Exported images may be used as backups.

### 1.1.7 Cloud Container Engine (CCE)



The Cloud Container Engine (CCE) service is a container service that features high availability and elastic scalability. With CCE service, users can create, run, and stop Docker containers conveniently. The CCE service also provides a graphical application orchestration tool for users to create and deploy applications efficiently.

The CCE service supports only stateless Docker applications at present.

The CCE service uses Kubernetes to deploy and manage Docker applications, and provides a unified interface for users to manage applications.

Features:

- **Application management:** This feature enables users to create, update, delete and query Docker container applications. It also supports management of application templates and component templates.
- **Graphical orchestration:** This feature provides a graphical orchestration tool for users to define topology structures by dragging components and to deploy applications.
- **Private image management:** This feature enables users to manage private images, such as uploading, updating, or deleting images.
- **Cluster management:** This feature enables users to manage container clusters, such as creating, updating, or deleting a container cluster.
- **Application Elastic scaling:** This feature enables users to scale required resources based on load conditions of applications to flexibly respond to Internet traffic changes.
- **Monitoring and log query:** This feature enables users to monitor applications' CPU usage and memory usage with a graphical display. It also supports collection and download of logs.
- **ELB to Application:** This feature enables user to apply ELB to Application.

For each Docker container, the User can configure the memory size and CPU specifications

The total number of nodes that can be created on clusters of each tenant is also restricted by the resource quota (ECS, VPC, etc...) of the tenant.

### 1.1.8 Dedicated Cloud (DEC)

The "Dedicated Cloud" service makes it possible to provision a pool of isolated hypervisors in the public Cloud. In this way, the Customer benefits within its Tenant from dedicated physical servers to build its own virtual resource groups. The Client can connect its dedicated cloud to virtual networks, dedicated storage resources or distributed storage resources (EV, OBS) and use other Flexible Engine services to create ECS, load public or private OS images (IMS)..., establish backups (VBS)...

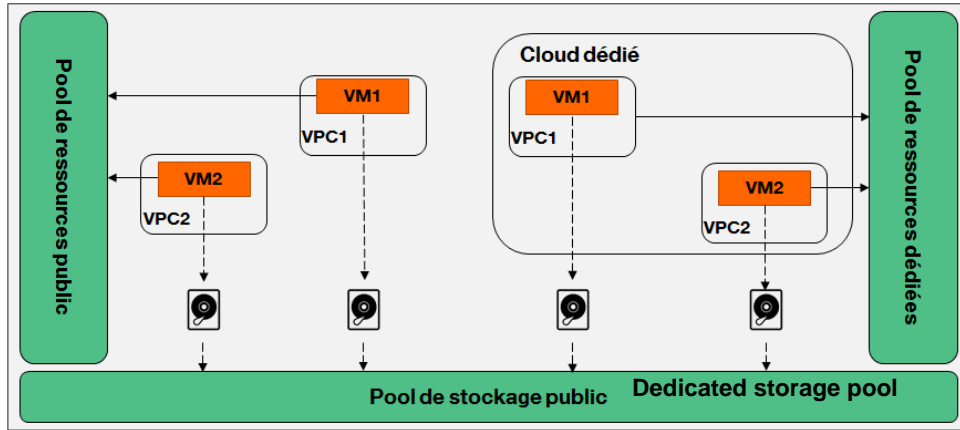


Figure No. 4: Schematic diagram of the Dedicated Cloud Service

The available servers and the invoicing principle are specified in the Price List.

## 1.2 Flexible Engine storage services

### 1.2.1 Elastic Volume Service



Elastic Volume Service (EVS) is a scalable virtual block storage service based on the distributed architecture. The method for using an EVS disk is the same as that for using hard disks on traditional servers.

The EVS disk provides high data reliability and I/O throughput and is easy to use. Therefore, it can be used by file systems, databases, and other system software or applications that require block storage devices.

Volumes are highly available and are used as partition of servers starts or also as storage devices of additional data. Block volumes are available in two performance ranges:

- Standard range using SATA disks
- High I/O range using SSD disks

#### 1.2.1.1 Description

EVS provides the User with high-performance, persistent block storage. The User creates EVS disks and attach them to Elastic Cloud Servers (ECSs) so that the ECSs can access and use the disks.

EVS provides the following features:

- Supports different types of EVS disks, including common I/O ultra-high I/O EVS disks.
- Allows the User to expand the EVS disk capacity elastically to meet the increasing requirements for storage capacity.
- Works with Volume Backup Service (VBS) to provide the backup service..
- Provides a system disk with a capacity of 1 GB to 32 TB and a data disk with a capacity of 10 GB to 32 TB.

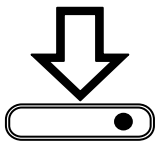
#### 1.2.1.2 Specifications

Item	Common I/O	Ultra-High I/O
Maximum capacity of a single disk	32 TB	32 TB

Item	Common I/O	Ultra-High I/O
Maximum IOPS per EVS disk	1000	20,000
Maximum throughput per EVS disk	40 MB/s	320 to 350 MB/s
Average response time	10 ms to 15 ms	1 ms to 3 ms

**Charging of EVS service is based on usage.**

### 1.2.2 Object Storage Service



Serving as a cross-platform storage architecture featuring high reliability and secure data sharing, Object Storage Service (OBS) provides customers with secure and reliable data storage at an affordable price. OBS delivers powerful capabilities, including bucket creation, modification, and deletion as well as object upload, download, replication, modification, and deletion. It can store any type of files and is suitable for common users, websites, enterprises, and developers.

As an Internet-oriented service, OBS provides web service interfaces (WSIs) over Hypertext Transfer Protocol (HTTP) and Hypertext Transfer Protocol Service (HTTPS). Users can use OBS Console or clients to access and manage data stored on OBS from any computer connected to the Internet anytime, anywhere. Additionally, OBS is compatible with most Amazon Simple Storage Service (S3) application platform interfaces (APIs). Users can invoke the Representational State Transfer (REST) APIs of OBS and software development kits (SDKs) to develop software adapting to upper-layer applications or connect to the Amazon S3 storage. This allows users to focus on service applications instead of the underlying storage implementation technologies.

OBS offers three storage classes: Standard, Warm and Cold. OBS Standard features low access latency and high throughput. OBS Warm is suitable for storing data that is infrequently accessed but requires fast access response. OBS Cold is oriented to data archiving and long-term backup with rare data access.

**Charging of OBS service is based on** on storage used and requests executed, depending on the storage classes.

### 1.2.3 Local Storage to Cloud servers

Local Storage of Cloud Servers optimized for Big Data ('d' i) is intended for high performance intensive uses of Big Data.

Described as "ephemeral" disk because it has the characteristic of being located on the internal disks of the hypervisor where the Client creates the server, it is destroyed when the VM is destroyed. This behavior must therefore be managed at the application level.

It is particularly suitable for Big Data clusters and No SQL databases whose applications take full advantage of its reduced access time, the possibility of parallelization and its large bandwidth. Up to 24 1.8 TB local volumes can be configured for distributed Big Data clusters.

### 1.2.4 Volume Backup Service



Volume Backup Service (VBS) provides snapshot-based protection for Elastic Volume Service (EVS) disks in the public cloud.

VBS provides online one-click backup and restoration for EVS disks, such as system and data disks of ECSs, allowing the User to leverage another layer of security. If an Elastic Volume Service (EVS) disk of an ECS is faulty or logic errors occur on data, the User can use the backups to quickly restore data.

VBS provides disk backup services. A web-based management console is provided for the User to back up the User's EVS disks.

VBS provides the following functions:

- EVS disk-level complete or incremental backup service
- Manual backup service or automated backup policy
- Backup task status query
- Efficient EVS disk creation or reversion to the original state

- Storage type is SATA supported by OBS.
- Multiple copies in different AZs supported by OBS.
- Cross AZ restoration of EVS disks

**Charging of VBS service is based on usage.**

#### **1.2.4.1 Specifications**

- Maximum 360 backup sets for each Tenant.
- Each EVS disk of a Tenant supports up to 20 backup sets.
- Total 200TB of capacity for each Tenant;
- Maximum 5 concurrent VBS backup operations executing at one time, including create backup, delete backup and rollback. More operation will be queued.

### **1.2.5 Cloud Server Backup Service**

Cloud Server Backup Service (CSBS) offers the backup protection service for Elastic Cloud Servers (ECSs) towards Object Storage Service (OBS). It works based on the consistent snapshot technology for Elastic Volume Service (EVS) disks. Backups of all the EVS disks on an ECS are generated at the same point in time.

By default, only the first backup is full and subsequent ones are incremental. CSBS performs the following functions: manual backup, automatic backup and restoration.

The CSBS service is charged based on OBS usage plus one fixed monthly fee for each backed up VM.

#### **1.2.5.1 Limitations**

- Applications and file systems on the ECS are not suspended before backup, and memory data is not backed up.
- Each ECS can be associated with only one backup policy.
- A maximum of five EVS disk backup creation and/or deletion jobs can be executed concurrently for each Tenant.
- Backup creation or deletion jobs are applied to whole ECS, including all their EVS disks.

### **1.2.6 Storage Disaster Recovery Service (sDRS)**

Storage Disaster Recovery Service (sDRS) allows the Customer to restart his IT activity on another Flexible Engine AZ. Thus, sDRS allows the Customer to set up a DRP (Disaster Recovery Plan) adapted to failures or disasters affecting his applications or the nominal infrastructures on which these applications run.

The Client is autonomous and solely responsible for maintaining in operational conditions and activating the protection of his activity. sDRS allows him to select the VMs to be protected ; to test the restart of his activity on the recovery site ; to switch his activity to the recovery site ; to restore his activity on the nominal site.

sDRS is based on VM replication, with associated applications and data. This replication is done between two AZs of the same Flexible Engine Region.

The following table presents the costs incurred by the Client in setting up a DRP :

<b>Costs incurred</b>	<b>Mode :</b>	<b>Protection</b>	<b>Test</b>	<b>Recovery</b>	
Number of protected VMs		X	X	X	Costs specific to sDRS
Volume of data transferred between the nominal AZ and the recovery AZ		X	X	X	
Storage, on the recovery AZ, of protection data		X	X		Additional costs on Flexible Engine to be taken into account
CPU/RAM/Storage activity, at the recovery site, of test or production VMs			X	X	

#### **1.2.6.1 Limitations**

- sDRS doesn't constitute a DRP (Disaster Recovery Plan), but only a solution for the Client to set one up.
- The nominal site and the recovery site must be 2 AZs from the same Flexible Engine Region.
- In the Paris Region, the recovery AZ must be EU\_West-0a (PA3).



- Orange Business Services makes no commitment to data freshness (Recovery Point Objective) and recovery speed (Recovery Time Objective).

### 1.2.7 Scalable File Service

Scalable File Service (SFS) provides an on-demand, scalable, and high-performance shared file system accessible to all Elastic Cloud Servers (ECSs) of a given Virtual Private Cloud (VPC) across AZs within a Region.

SFS is charged based on volume of storage used.

#### 1.2.7.1 Limitations

- Scalable File Service supports only NFSv3 protocol.
- SFS does not allow modifying the name, AZ and VPC of existing file systems.

### 1.2.8 Dedicated Distributed Storage Service (DSS)

Dedicated Distributed Storage Service (DSS) provides dedicated, physical storage resources. It can interconnect with various computing services, such as ECS, BMS, and DCC. It supports disk sharing, disk encryption, disk backup, and snapshots.

## 1.3 Flexible Engine Network Services

### 1.3.1 Virtual Private Cloud



Virtual Private Cloud (VPC) enables the User to provision a logically isolated, configurable, and manageable virtual network environment, improving security of resources of a Region and simplifying network deployment.

The VPC service enables Tenant Users to have complete control over their virtual network environments, including network creation and DHCP configuration. Tenant Users can use security groups to improve security of their network environments. Additionally, they can assign Elastic IP Addresses (EIP) for their VPCs to connect the VPCs to the public network. Tenant Users can also connect VPCs to their physical data centers using a virtual private network (VPN) or using a direct connection,

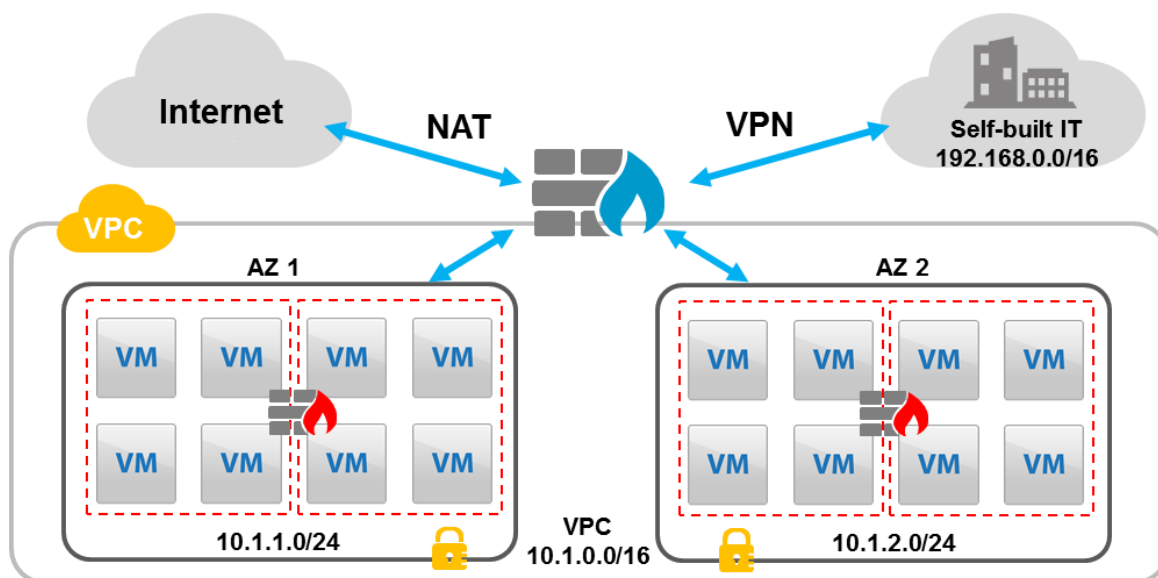


Figure n° 1: VPC in multi-AZ Region

#### 1.3.1.1 VPC limitations

- IP address range (RFC1918): 10.0.0.0/8, 172.16.0.0/12, and 192.168.0.0/16
- Bandwidth range for EIPs: 1 Mbit/s to 1Gbps
- VPN subnets: 1000

Technical quotas per Tenant are available on the Flexible Engine Console.

### 1.3.2 Adresses IP Publiques Elastiques (EIP)

An Elastic IP address (EIP) is a static IPv4 address reachable from the Internet and designed for dynamic computing. An EIP is associated to your Flexible Engine Tenant and you are responsible for binding it to an ECS to enable communication with the Internet.

EIP states are:

- Allocated: Reserved for a Tenant
- Bound: Allocated and bound to an ECS

When an ECS is deleted, bound EIPs remain allocated to the Tenant and may be bound to another ECS.

Allocated public IP addresses are billed per hour (PAYG model).

### 1.3.3 VPN IPsec aaS

Virtual Private Network as a service is a function of the VPC which allows the creation of a secured IPsec tunnel from the VPC to another IPsec endpoint (such as another VPC within the Flexible Engine cloud) or over the Internet to an external infrastructure.

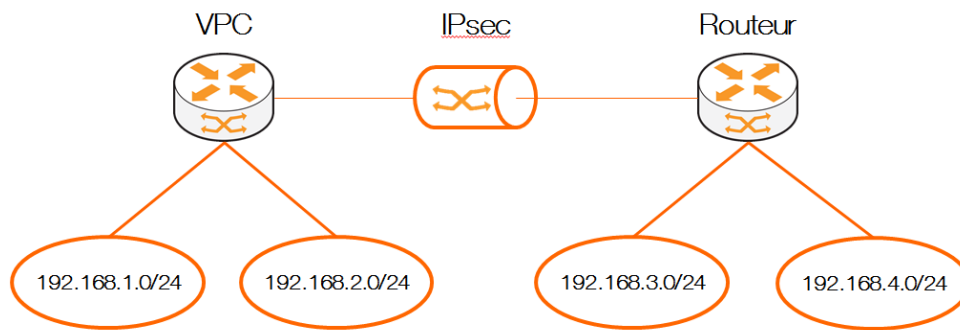


Figure n° 2: *VPN IPsec as a Service*

The VPN as a Service is charged based on usage.

### 1.3.4 Security Groups

A security group acts as a virtual firewall for your ECS to control inbound and outbound traffic. You can attach to an ECS several security groups. Security groups act at the instance level and not at the subnet level. Therefore, each ECS in a subnet of your VPC could be assigned to a different set of security groups. If you do not specify any security group at the launch of an ECS, the ECS is automatically assigned the default security group of the VPC.

Each security group allows to create and edit rules specifying the source and destination addresses, sources and destination port numbers and protocols.

Security groups are not charged.

### 1.3.5 Elastic Load Balancer



Elastic Load Balance (ELB) is a service that automatically distributes access traffic to multiple Elastic Cloud Servers (ECSs) to balance their service load.

ELB provides the following functions:

- Traffic distribution across availability zones (AZs), improving reliability and maintainability
- Elastic automatic scaling based on traffic demands
- Linear capacity expansion, eliminating SPOFs
- Support for public network load balancers, which receive requests from clients over the Internet and route the requests to the User's ECSs.
- Support for private network load balancers, which receive requests from clients in the User's VPC and route the requests to the User's ECSs in the subnets.

- Layer 4 (TCP) and layer 7 (Http/Https) load balancing
- Support for ELB monitoring metrics, such as incoming and outgoing traffic, new requests, concurrent requests, incoming and outgoing data packets, active connections, inactive connections
- Working with Cloud Eye (CES) to display monitoring metrics and to allow alarm thresholds to be configured
- Working with AS to implement automatic scaling based on service workload
- Support the load balancer connection draining for http and https protocol
- Support for access logs that capture detailed information about requests sent to the User's load balancer.

The ELB service is charged based on usage.

### 1.3.6 The private Elastic Load Balancer Service

This Feature automatically distributes access traffic inside a Virtual Private Cloud, without using internet access. The private Elastic Load Balancer Service distributes traffic to multiple ECSs in the VPC within an Availability Zone or across Availability Zones in a given Region.

Private ELB (e.g. for database servers) can be combined with internet-facing ELB (for web servers).

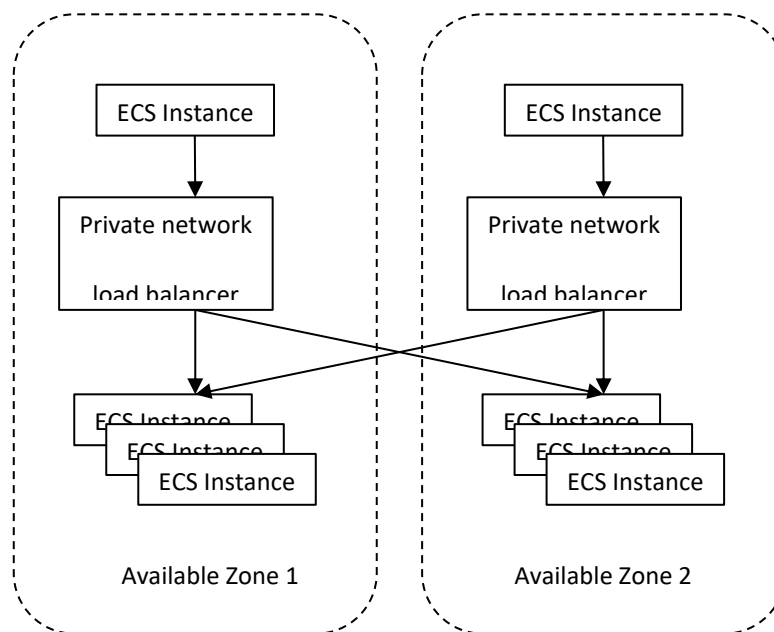


Figure n° 3: *Private network load balancer*

#### 1.3.6.1 Limitations

ECS can only access the private network load balancer in the same availability zone.

The private ELB service is charged based on usage.

### 1.3.7 Internet access

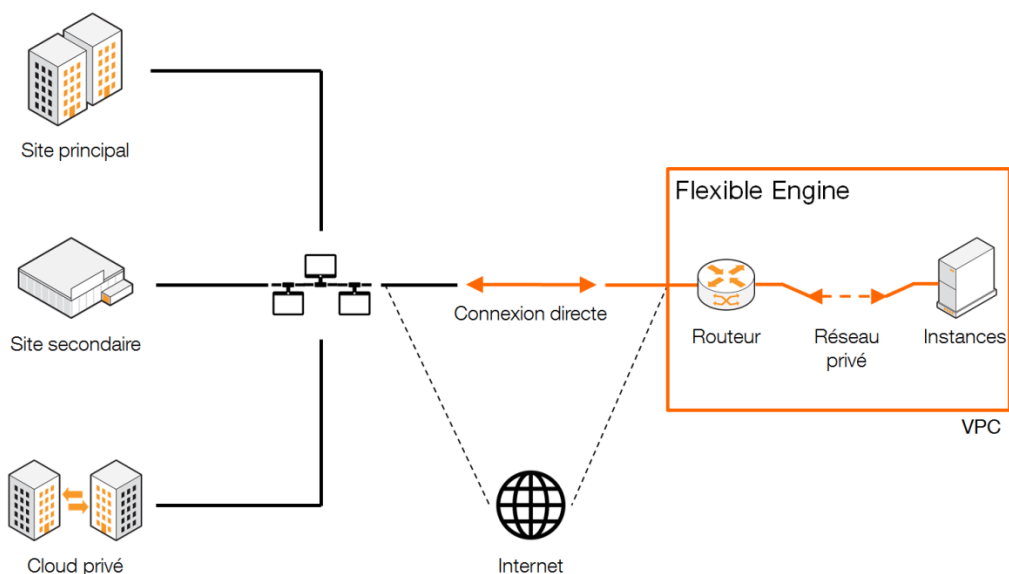
Flexible Engine services are available over the Internet as a default access. Flexible Engine Console, Cloud Store Customer Space, Object Storage Service are accessed via authenticated login / password.

The User can configure VPC and EIP and Security Groups such that ECS can access to the Internet.

Outband traffic to public addresses is charged on volume.

### 1.3.8 Direct Connect

Flexible Engine Direct Connect is a solution for directly connecting customer network to FE Virtual Private Cloud (VPC) without using Internet.



Customer resources (ECS) are contained within a Virtual Private Cloud (VPC) and externalized back to the enterprise over a direct connection which may be through a cross connect called FE Dedicated Port or through a partner network. Available capacity for each solution is given in the table below.

Monthly Direct Connect fee is based on the subscribed bandwidth and do not include transport fees for partner or any other charge to deploy and connect customer routers to FE Direct Connect.

Direct Connect Capacity	FE Dedicated Port	Partner Networks	
		Business VPN Galerie	Equinix Cloud Exchange
2 Mbps		X	
5 Mbps		X	X
10 Mbps		X	X
30 Mbps		X	X
40 Mbps		X	X
50 Mbps		X	X
100 Mbps		X	X
200 Mbps		X	X
300 Mbps		X	X
500 Mbps		X	X
1 Gbps	X	X	X
2 Gbps			X
3 Gbps			X
4 Gbps			X
5 Gbps			X
6 Gbps			X
7 Gbps			X
8 Gbps			X
9 Gbps			X
10 Gbps	X		X

#### 6.3.8.1 Direct Connect through Flexible Engine Dedicated Port

Customer can directly access 1Gbps or 10Gbps port on FE routers.

For dedicated port (1Gbps and 10Gbps), FE customer is accountable to rent colocation space to deploy its own routers in the Flexible Engine PoP (Point of Presence), and to interconnect these routers to its internal network and to purchase the circuits to connect these routers to FE dedicated port.

#### 6.3.8.2 Direct Connect through a partner network

Current partners are: Orange Business Services (Business VPN Galerie) and Equinix (Equinix Cloud Exchange).

Customer can use Equinix Cloud Exchange to connect its private network to Flexible Engine. In that case, the customer should subscribe to Equinix Cloud Exchange. FE Direct Connect through Equinix Cloud Exchange is available in Paris and will be deployed in Singapore and Atlanta according to the roadmap.

### 1.3.9 Domain Name Service

Customer is charged according to the number of hosted zones and the number of DNS queries.

The different security mechanisms generate also events and alerts, consolidated in real-time in a “security events” zone, not accessible to Users. Flexible Engine relies on SOC services for the recurring operation 24/7/365 of these events. SOC offers a specific follow-up of failed VPN connections on the administration network.

Concerning the traces of security equipments, Flexible Engine has access logs to APIs services, administration console and customer dashboard. These data are intended to be communicated to legal authorities.

Flexible Engine provides services that allow a user to create a virtualized infrastructure over a shared physical infrastructure for all users. The virtualization mechanisms implemented ensure a strong logical partitioning of the client's virtualized resources (one per client). The access to the resources of a Tenant is done through the OpenStack APIs implementing a strong (login / password / token) and secure (in SSL via https) authentication.



#### **1.4.1.1 System Virtualization**

The Flexible Engine virtualization platform is based on the OpenSource XEN virtualization engine. In addition to the standard security of this solution, the hypervisor has been hardened to strengthen its partitioning:

- **Processing:** Different virtual server processors have no visibility on each other
- **Memory:** Tests conducted by Orange show that memory remnants from a previously allocated VM cannot be recovered
- **Persistent data:** no local storage on the hypervisor (excluding BigDisk type specific template). The access to the virtual servers deployed in the holding is established by means of a secure connection SSH or RDP.

#### **1.4.1.2 Storage Virtualization:**

Segregated access to the stored data (block and object) is ensured by an application layer (Openstack Cinder for storage block, compatible with AWS S3 for object storage) which allows data access only to data owners or the corresponding storage. In addition, data written to the infrastructure is not recoverable once it is deleted by the client or when the corresponding virtual infrastructure is terminated by the customer. These mechanisms are regularly tested thanks to intrusion tests carried out by Orange Cyber Defense and its partners, whose skills are recognized. Physical disks needing to be replaced are destroyed by grinding through a traceable and certified process.

#### **1.4.1.3 Network Virtualization:**

VPC features, carried by the Neutron Openstack component, provide a logical logical partitioning of communications on the user network. Any form of network traffic that is not naturally authorized on the customers tenant is not processed by the devices supporting the client's virtual network, preventing any use of spoofing technologies.

### **1.4.2 Anti-DDoS**

The anti-distributed denial of service (Anti-DDoS) aims to provide precise capabilities for defending DDoS attacks, such as challenge collapser (CC) attacks, SYN flood, and User Datagram Protocol (UDP) flood, for tenants by encapsulating professional anti-DDoS device functions. Tenants can configure anti-DDoS thresholds based on leased bandwidth and service models. The system promptly notifies tenants of the defense status of websites after detecting attacks.

The Anti-DDoS service can defend tenants' public IP addresses against traffic attacks and application-layer CC attacks (mail).

The Anti-DDoS service provides the following functions:

- Defends against traffic attacks and application-layer CC attacks.
- Allows tenants to customize Anti-DDoS policies.
- Allows tenants to select public IP addresses to be defended.
- Provides real-time monitoring reports.
- Provides weekly security reports.

### **1.4.3 Identity & Access Management (IAM)**

IAM centrally controls Users security certificates and Users access policies (which include an access control list). All APIs used for Flexible Engine Services (as well as access to the Flexible Engine Console) are protected by authentication and authorization controls by the IAM Feature.

The IAM service also includes a multi-factor authentication capability (MFA-Multiple Factor Authentication) and a temporary access creation Feature (STS-Security Token Service).

### **1.4.4 Key Management Service (KMS)**

Key Management Service (KMS) is a service that helps Users centrally manage and safeguard their Customer Master Keys (CMKs). KMS uses hardware security modules (HSMs) to protect CMKs.

A Customer Master Key (CMK) is a Key Encryption Key (KEK) created by a user with KMS. It is used to encrypt and protect Data Encryption Keys (DEKs). One CMK can be used to encrypt one or multiple DEKs.

## 1.5 Flexible Engine Analytics services

### 1.5.1 Elastic Big Data Service (Map Reduce Service)

The MapReduce Service (MRS) enables the deployment of secure clusters providing computing and storage resources for massive data analysis or real-time processing.

The resources used for calculation and storage can be created and deleted according to the necessary processes in order to optimize costs.

MRS delivers the following functions:

- Hadoop: distributed platform using MapReduce to perform parallel processing on large volumes of data and HDFS for storage
- Spark: distributed processing framework capable of reducing the latency of processing large amounts of data through its in-memory analysis functionalities. It supports Scala, Java and Python languages. It integrates into MRS, Spark SQL to request and analyze data via the standard SQL language.
- HBase (Hadoop Database): distributed non-relational database management system, written in Java, with structured storage for large tables. It provides a reliable, powerful and scalable solution to complete relational databases in massive data processing.
- Hive Apache: data warehouse infrastructure integrated with Hadoop allowing analysis, query via a syntactically close language to SQL as well as data synthesis.
- HDFS (massive data storage): distributed file system that gives high-performance access to data distributed in Hadoop clusters. Like other Hadoop related technologies, HDFS has become a key tool for managing Big Data pools and supporting analytical applications. After being processed and analyzed, the data is encrypted via SSL and stored in object storage (OBS) or HDFS.
- Kerberos: MRS uses KrbServer to provide Kerberos authentication on all components, securing authentication mechanisms.
- Hue: provides a graphical interface (WebUI) for MRS applications, enabling HDFS, MapReduce and database management, HQL and SparQL editing.
- CarbonData: column data format here associated with Spark and which allows to accelerate the requests of an order of magnitude.
- Kafka: distributed streaming platform. It uses the concepts of "publisher" and "subscriber" and allows the collection and consumption of messages in real time.
- Storm: real-time processing system. During Hadoop for real time, Storm allows large scale data flows in real time.
- Loader: Sqoop implementation, allowing to transfer data from Hadoop to structured datastores and to use multiple datasources and exchanges between HDFS, HASE, RDBMS, NFS, SFTP.
- Apache Flume: software for collecting and analyzing log files. The tool is designed to work within a distributed computing architecture to support peak loads.

The types of ECS supported by MRS are listed in the Price List.

#### 1.5.1.1 Usage Restrictions

The following restrictions must be noted during MRS usage: If files are uploaded through the web, the file size cannot be larger than 50 MB. If data is dumped from HDFS to OBS, the maximum data size is 5 GB. The maximum network bandwidth is 5 Gbit/s. For details, see the specification limitations of ECS, VPC, EVS, and OBS.

MRS Service pricing is based on the choice of ECS machines used within the MRS Cluster and is in addition to the price of the ECS service.

## 1.6 Flexible Engine Database Services

### 1.6.1 Flexible Engine Relational Database Service (RDS)

The relational database service (RDS) allows the deployment of MySQL, PostgreSQL or Microsoft SQL Server databases, with a deployment in simple mode or in active-passive mode.

The installation and deployment of databases is done automatically. The service also offers operation and maintenance tools: PRA, backup and restore, monitoring, migration. The service reduces complexity and maintenance costs, allowing the customer to focus on the application and the business.

The RDS templates and systems as well as their pricing are presented in the Price List.

### **1.6.2 Distributed Cache Service (DCS)**

Distributed Cache Service (DCS) is an in-memory database service compatible with Redis and IMDG. Based on an HA architecture, DCS supports three instance types: single-node, master/standby, and cluster. DCS ensures high read/write performance and fast data access.

### **1.6.3 Document Database Service (DDS)**

Document Database Service (DDS) is a MongoDB-compatible database service that is secure, highly available, reliable, scalable, and easy to use. It provides a variety of functions including DB instance creation, scaling, redundancy, backup, restoration, monitoring, and alarm reporting.

## **1.7 Enterprise Applications**

### **1.7.1 WorkSpace**

WorkSpace is a Desktop-as-a-Service (DaaS) solution that allows the Customer to provision Users virtual, cloud-based Microsoft Windows desktops including vCPU, disks and operating systems. This way, Users are able to access them from supported devices.

The list of instances is available on the console and is subject to roadmap evolution.

WorkSpace can be purchased as a flat monthly subscription with unlimited usage rights or as a pay-per-use hourly fee, with or without a monthly subscription.

### **1.7.2 Remote Desktop Services (RDS/SAL)**

RDS allows a User to remotely connect to an enterprise application hosted on a Windows server. The Customer must subscribe an RDS/SAL (Subscriber Access License) for each User who may have access to the relevant enterprise application. Machines cannot be licensed.

The Customer may either subscribe to licenses from Orange Business Services in rental mode or bring licenses held by him in mobility mode, under the conditions described in the "Licenses / Microsoft Products" section.

The selling price, available in the Flexible Engine Price List, is applicable per full calendar month without prorata temporis.

### **1.7.3 Office**

Office is an office automation software suite. Flexible Engine offers the "Standard" version including Word, Excel, PowerPoint, OneNote, Outlook, Publisher and the "Professional Plus" version including Word, Excel, PowerPoint, OneNote, Outlook, Access, Publisher and Skype Client software.

Each Office license (Standard or Professional Plus) is subscribed for a single User, a natural person. These licenses are not eligible for mobility.

However, "Office 365 Professional Plus" licenses, which are not offered in the Flexible Engine catalogue, can be provided by the Customer, provided they are declared to Orange Business Services.

Each Office (Standard or Professional Plus) or Office 365 Professional Plus license must be associated with a "Remote Desktop Services" license.

The selling price of Office licenses (Standard or Professional Plus), available in the Flexible Engine catalogue, is applicable per full calendar month without prorata temporis.

## **1.8 Developer tools and APIs**

### **1.8.1 Flexible Engine Open APIs**

The APIs made available by Flexible Engine are RESTful APIs based on OpenStack technology and documented in the Help Center.



### 1.8.2 Orchestration: Resource Template Service (RTS)

With the Heat RTS (Resource Template Service) orchestrator made available via APIs, the Customer can automatically and configurably deploy a virtualized infrastructure (servers, routers, networks, volumes, etc.) using the various APIs of the Openstack modules.

It is thus possible to create HOT (Heat Orchestration Template) templates that allow to specify the configuration, description and relationships of all resources to automate and facilitate the deployment of the platform.

### 1.8.3 API Gateway

API Gateway allows the developers to create, publish, secure and monitor the APIs of their applications.

The Feature is charged based on the number of API calls and the outgoing traffic.

## 1.9 Flexible Engine Management Tools and Portals

### 1.9.1 Cloud Eye Service

The Cloud Eye Service (CES) is an open monitoring service that allows you to set up monitoring, alerting and supervision for your resources in real time.

It allows metrics to be monitored directly on computing instances (ECS), storage volumes (EVS), Virtual Private Clouds (VPC), load balancers (ELB), autoscaling groups (AS) andaaS relational databases (RDS).

It is thus possible for the Client to configure alerting rules and notification policies based on its metrics to track the status and performance of monitored objects over time.

The features are as follows:

- **Automatic monitoring:** The system automatically starts monitoring based on the resources obtained. Apart from certain ECS metrics, the User do not need to install any plug-ins to monitor service metrics.
- **Flexible alarm function:** The User can flexibly set alarm rules on any of the monitoring metrics, configure alarm thresholds, as well as enable or disable the alarm function.
- **Real-time notification:** The User can configure alarm notification to receive short messages or emails when alarms are generated.
- **Following metrics:** On the Dashboard page of the CES console, the User can follow a metric of a monitored object or delete a followed metric. After following a metric, the User can view monitoring data concerning it each time the User log in to the CES console.

### 1.9.2 Cloud Trace Service

Cloud Trace Service (CTS) provides operation log on cloud service resources. With this service, the User can query, audit and backtrack operation log, and store traces in OBS buckets with high reliability. Cloud Trace Service records all traces that are triggered by open APIs and Console from every cloud service that's integrated with this feature. The User can create only one tracker for each Region in each Tenant. This feature is not charged.

### 1.9.3 Simple Message Notification

Simple Message Notification (SMN) is a message notification service. It enables users to send messages through emails, SMS or HTTP/HTTPS to a group of subscribers in batches.

SMN can be integrated with other Features to receive event notifications from them.

SMN is charged based on number of API calls, number of notifications, number of SMS and their destination, and volume of Internet traffic used.

#### 1.9.3.1 Limitations

- The subscription takes effect only after the subscriber confirms the subscription. Subscribers must be invited and confirm their subscription to receive messages.
- The maximum message size is restricted to 256 kB.
- Messages are reserved for 7 days and the system automatically clears them afterwards.
- Upon a message pushing failure, the system tries to send the message for another 6 times. If the pushing still fails, the system abandons the message.

#### 1.9.4 Tag Management Service (TMS)

Tag Management Service (TMS) is a service for tagging and categorizing cloud services. Users can use tags to classify and search cloud resources by purpose, dimension, project, environment... Supported resources are: ECS, OBS, VPC, VBS, EVS, AS, IMS.

## 2 Support

The purpose of this chapter is to describe the support services provided by Orange Business Services within the context of the Services of the Flexible Engine solution, their organisation and the models of the associated processes.

This chapter gives details of:

- The support solutions offered to the Customer;
- The organisation of communications between Orange Business Services and the Customer;
- The organisation and scope of the support activities provided by Orange Business Services;
- The prerequisites required for the provision of the support by Orange Business Services;
- How an incident should be reported or a request should be made to Technical Support;
- How Technical Support records and deals with an incident or a request;