



## Service Description

### Cloud Avenue

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## 1 Definitions

In addition to the definitions in the **General Terms** and the **Cloud Specific Terms**, the following specific definitions apply to this Service Description.

**Application Programming Interface (or API)** refers to the programming interface for programmatic access to the vDC resources.

**Bandwidth** refers to the data transfer capacity made available to the Customer to transfer data between the hosting platform and the Internet or Intranet network.

**Bare Metal Server (BMS)** refers to a physical server dedicated to a customer and deprived of the vmware virtualization layer.

**Bare Metal Server GPU (BMS GPU)** refers to a fully dedicated physical server with our **BMS GPU** service, designed specifically for your most demanding artificial intelligence (AI) and machine learning (ML) needs.

**Domain Name Service (or DNS)** refers to the system for establishing a correspondence between an IP address and a domain name

**Disaster Recovery as a Service (or DRaaS)** refers to a disaster recovery solution implemented between the Customer's infrastructure and the Cloud Avenue platform. In this document, DRaaS also refers to a method of billing for computing power.

**High Availability Dual Room (or HADR)** refers to a Feature that allows a vDC to have a very high level of availability thanks to a distribution of its resources over two rooms and the use of metro-cluster.

**Infrastructure** refers to a set of resources (Virtual Machines, servers, firewall, load balancer...) set up by the Service Provider to provide the Service.

**Customer License(s)** refers to the Third-Party Software licenses subscribed by the Customer to be used on the Infrastructure.

**Local Area Network (or LAN)** means a local computer network such that the participating terminals (computers, etc.) send frames to each other at the link layer without the use of an intermediate router. LANs are interconnected by means of switches.

**Virtual Machine (or VM)** refers to a software computer that, like a physical computer, runs an operating system and applications. The virtual machine consists of a set of specification and configuration files and is supported by the physical resources of a host. Each virtual machine has virtual devices that provide the same function as the physical hardware.

**Organization (or vOrg)** means a virtual private space provided by the VMware vCloud Director application, the software on which the Cloud Avenue service is based. The Organization includes all the Virtual Datacenters (vDC) deployed by the Customer to host its VMs.

**Virtual Private Network (or VPN)** is an extension of local networks that preserves the logical security that can be had within a local network. It corresponds in fact to an interconnection of local networks via a "tunnel" technique.

**Service** means the Cloud Avenue service provided for an Organization.

**Operating System (or OS)** means a central set of programs on a computing device that serves as an interface between the hardware and the application software

**Virtual Application (or vApp)** means a logical envelope in which VMs are deployed; this envelope allows for the consistent and simplified management of a set of VMs that have a reason to be grouped together (functional or security reason). A VM can only be created in a vApp

**Virtual Central Processing Unit ( or vCPU)** is a virtual component of the computer that runs computer programs

**Virtual Datacenter (or vDC)** is the VMware logical object of the same name. A vDC corresponds to a pool of computing resources (CPU power, RAM memory capacity), storage, and virtualized networks (Internet and VPN access, firewall, load balancer) allowing a secure network architecture to be defined. An Organization groups together one or more vDCs.

## 2 Purpose

The purpose of this Service Description is to define the conditions under which the Service Provider provides the "Cloud Avenue" service (hereinafter the "Service") to the Customer.

This description is governed by the Cloud Specific Terms.

## 3 Service Overview

### 3.1 Overall description

The Service is an offering of Infrastructure as a Service (IaaS) service.

### 3.2 Geographic footprint

The Service is available at the Val-de-Reuil and Reuil-Malmaison Datacenters in France.

An Organization (or tenant) is subscribed for a Datacenter, chosen by the Customer at the time of the initial Order.

The number of rooms available on the different Datacenters is given in the table below:

Datacenter	Number of rooms
Val de Reuil	2
Chartres	1

## 4 Terms of use

### 4.1 Prices

The prices of the Service are set out in the Cloud Avenue Service Price Sheet and on the <https://cloud.orange-business.com/en/documents-contractuels-applicables-en-france/> website.

In addition to the conditions set forth in the General Conditions and the Cloud Specific Terms, the prices of the Service are subject to review and may be updated monthly. The new prices apply to current Contracts. The Customer will be informed of the new prices by publication on the User Interfaces or by any other means, no later than the date on which the new prices come into force. In the event of a price increase for an existing Functionality, the Customer will be informed by e-mail or by any other means no later than 30 days before the new prices come into force. The prices in force on the Activation Date may differ from those communicated at the time of subscription.

### 4.2 Scheduled maintenance

The recurring maintenance slots are as follows:

- every Wednesday, from 00:00 am to 6:00 am
- vDC « class VoIP » : every Thursday from 00:00 am to 4:00 am
- service « vCenter On Demande » (vCoD) : every Tuesday from 00:00 am to 6h00 am.

The maintenance operations do not impact the functioning of the Customer's VMs. In the event of a risk of impact on the Service, the Customer will be notified with a notice period of 15 days.

Maintenance operations, with no impact on Service, may be carried out between 12:00 p.m. and 2:00 p.m. from Monday to Thursday. Very exceptionally, maintenance operations linked to major incidents, or to the security of the platform, may be carried out, without notice, at any time.

For the VCOD service, if the proposed date presents a disadvantage penalizing the Customer, the latter may contact the Provider to agree on an adjustment to the intervention schedule, within the limit of maintenance which only concerns components dedicated to the client (client servers or control plane) and unless an imperative update cannot be deferred.

## 5 Service Access

### 5.1 Portals

#### 5.1.1 VCD portal

Access to the administration of the Service is via the vCloud Director Administration Portal (VCD). Detailed information about this portal is available at this link:

[https://wiki.cloudavenue.orange-business.com/w/index.php/VCloud\\_Director](https://wiki.cloudavenue.orange-business.com/w/index.php/VCloud_Director)

#### 5.1.2 Accessing the VCD portal and API

Access to the VCD portal and the VCD APIs are protected by an application firewall (WAF), which by default allows access from the Internet. These accesses can be closed by OBS at the request of the Customer via a change request on the Cloud Customer Space, for each Organization.

The VCD portal and the VCD APIs can be accessed without WAF filtering from the VPN Gallery access subscribed by the Customer.

#### 5.1.3 Cloud Customer Space

The Cloud Customer Space is a portal reserved for the Customer, allowing him to manage his Cloud Avenue contract(s).

The online documentation of the Cloud Customer Space is accessible from this link:

<https://cloud.orange-business.com/en/offers/cloud-customer-space-user-guide-presentation-of-the-cloud-customer-space/>

#### IMPORTANT

Communications about the Service are only made towards Users declared in the Cloud Customer Space. The Customer is responsible for adding the Users to be notified. Users must keep their information up to date (email, mobile and landline numbers).

## 6 Service Content

### 6.1 Virtual Datacenter

A Virtual Datacenter (vDC) is a pool of resources including:

- **Compute capacity**, expressed in GHz or vCPU, and in the amount of RAM,
- Storage capacity,
- External network connections (internet or VPN)

The compute (CPU + RAM) and Storage capacities are available into several classes of services.

#### IMPORTANT

A vDC has a performance class and a billing model, which defines the resource allocation mode (PAYG or Allocation Pool). It is not possible to change the resource allocation mode of a vDC after its creation. If the Customer wishes to change the resource allocation mode of their vDC, then they must order a new vDC and migrate their vApp/VMs to it

#### 6.1.1 vDC specifications by service class

For the detailed specifications of each class of service, go to the wiki at this address:

[https://wiki.cloudavenue.orange-business.com/w/index.php/Virtual\\_Datacenter](https://wiki.cloudavenue.orange-business.com/w/index.php/Virtual_Datacenter)

#### 6.1.2 Availability classes

Several availability classes are possible for a vDC, according to the Datacenter:

- One Room
- Dual Room (with 1 or 2 vDC)
- HA Dual Room, aka HADR.

For a full description of the availability classes, go to the wiki at this address:  
[https://wiki.cloudavenue.orange-business.com/w/index.php/Availability\\_classes](https://wiki.cloudavenue.orange-business.com/w/index.php/Availability_classes)

### 6.1.3 VDC resource management

The resource allocation of a vDC is chosen by the Customer. This allocation can be configured when the vDC is ordered, and can then be modified online by the Customer in the Cloud Customer Space.

The resource allocation of a vDC constitutes a "physical" limit that the VMs cannot exceed in order to run.

For a detailed explanation of vDC resource management, please visit the wiki at this address:

[https://wiki.cloudavenue.orange-business.com/w/index.php/Virtual\\_Datacenter#vDC\\_resource\\_management](https://wiki.cloudavenue.orange-business.com/w/index.php/Virtual_Datacenter#vDC_resource_management)

### 6.1.4 Billing mode

Three billing modes are available.

Billing mode	PAYG	Reserved	
VMware resource allocation	PAYG or DRaaS	Allocation Pool	
Billing	resources allocated to running VMs	100% of the vDC resources	

#### 6.1.4.1 "PAYG" and "DRaaS" Billing

PAYG & DRaaS	Compute	RAM
Billed resources (WU)	vCPU	GB
Billed quantities	Number of vCPU allocated to each running VM X Number of minutes per day	Quantity of RAM allocated to each running VM X Number of minutes per day

Usage time is billed by the minute.

A vDC in DRaaS mode is used in the case of VM replication between the Customer's private infrastructure (On Premise) and one of the **Cloud Avenue** platforms.

#### 6.1.4.2 "Reserved" Billing

In this model, all the vDC's GHz and RAM resources are charged at a flat rate.

Reserved	Compute	RAM
Billed resources (WU)	vCPU	GB
Billed quantities	Quantity of GHz allocated to the vDC X Number of days per month	quantity of GB allocated to the vDC X Number of days per month

## 6.2 Dedicated cluster

### 6.2.1 Principle

For certain use cases, or to meet certain regulatory constraints, the Customer may choose to host its VMs on dedicated physical servers. The management of resources in the VCD portal will be identical, however the available resources will be limited by the number of servers that the Customer has subscribed to.

For more details on dedicated clusters, go to the wiki at this address:

[https://wiki.cloudavenue.orange-business.com/w/index.php/Dedicated\\_Cluster](https://wiki.cloudavenue.orange-business.com/w/index.php/Dedicated_Cluster)

### 6.2.2 High availability

The Provider recommends a configuration that takes into account a hot spare blade. A defective blade will be replaced by the Provider within 48 hours. However, within this time frame, the VMs must be able to run on a cluster with one blade removed without significant impact on the performance of the hosted applications. **This sizing is the Customer's responsibility.**

### 6.2.3 Capacity management

Capacity management is at the Customer's initiative. The Provider will provide the Customer with VMware metrics to monitor the overall performance of the cluster, as well as the performance of the VMs.

**Important:** the decision to change the size of the cluster is the responsibility of the Customer.

The deadline for the installation of a blade by the Provider is 1 week maximum from the date of the Order. For any request for more than 5 servers, the maximum delay is 6 months.

### 6.2.4 Subscription

The minimum size for a cluster is **two servers** of the same type.

The billing is done monthly based on the number of physical servers reserved, and according to their characteristics.

The characteristics of the physical servers available for a dedicated cluster are detailed on the wiki at this address :

[Dedicated Cluster — Cloud Avenue \(orange-business.com\)](#)

[A blade added during the month is billed prorata temporis for the number of days it is active during the month.](#)

## 6.3 vCenter On Demand (aka vCoD)

### 6.3.1 Overview

The vCenter On Demand service consists of the following components:

- a dedicated cluster, based on physical HPE Synergy "hyper-converged" servers
- SSD storage directly attached to the servers
- a management infrastructure entirely dedicated to a vCoD
- a VMware vSphere virtualization layer and the vCenter management module
- vSAN, for storage virtualization

The management infrastructure (the control plane) includes different software from the VMware suite to provide the necessary functionality for optimal operation of a dedicated infrastructure.

Visit the wiki page for more information about the vCenter On Demand service:

[https://wiki.cloudavenue.orange-business.com/w/index.php/VCenter\\_On\\_Demand](https://wiki.cloudavenue.orange-business.com/w/index.php/VCenter_On_Demand)

### 6.3.2 Availability

The service is available in the Val de Reuil and Chartres Datacenters, in France. It is thus possible to request a "dual site" deployment, to increase the resilience of the infrastructure and to accept the loss of a site.

By default, the proposed configuration is in "single site" mode.

Dual site configuration is only possible if the following conditions are met:

- The number of nodes is at least 8



- The nodes are evenly distributed across the two sites, implying an even number of nodes in the stretched cluster. Inter-site connectivity via a dedicated encrypted link to the service area.

### 6.3.3 Subscription

The subscription to the vCenter on Demand service is made through the Customer's usual sales contact.

The Customer must order:

- A "starter kit", including a minimum pack of 4 Gen10 or Gen11 (from 2024) generation servers (or nodes)
- One or more additional nodes, depending on the desired target configuration
- An SSD storage package that can be scaled in terms of number of disks per node and disk size
- Optional software options (Inter-site connectivity via a dedicated encrypted link to the service area).

### 6.3.4 Capacity management

The Customer is responsible for managing the capacity of the cluster, both in terms of computing power and storage.

The Customer can, at any time, add or remove <sup>1)</sup> one (or more) node(s) to its cluster, from the Cloud Customer Space. He can also "upgrade" his storage package from, for instance, 4 disks per node to 8 or 10 disks per node, for all the nodes in the cluster.

### 6.3.5 Limits

It is not possible to have different node configurations; all nodes in the same cluster must be of the same type (see the list of available types on the price list or on the [wiki](#) page).

It is not possible to have different disk packs within the cluster: all nodes have exactly the same disk pack configuration in numbers and size.

It is not possible to downgrade the disk pack configuration from 8 to 4 disks per node, for example.

### 6.3.6 Billing mode

The Cloud Avenue Rate Sheet specifies the units of work invoiced.

These work units are billed monthly. A change in cluster configuration during the month will be taken into account in the billing, on a prorata temporis basis.

### 6.3.7 Commitment and Termination

There is no time commitment for the Customer. Customer may add or remove <sup>1)</sup> nodes and increase the number of disks per node in its cluster at any time.

The Customer may terminate the vCenter On Demand service (i.e., the entire cluster and its options) at any time via the Cloud Customer Space. The request will be processed at the beginning of the month following the request.

*<sup>1)</sup> with a minimum configuration of 4 servers per cluster for a single site, or 8 servers (4+4) for a dual site.*

## 6.4 Bare Metal Server (BMS)

### 6.4.1 Overview

The BMS service provides a dedicated server on which the customer can install an operating system chosen from a predefined list.

### 6.4.2 Availability

The BMS service is available at the Val de Rueil and Chartres sites, without restriction.

### 6.4.3 Subscription

To order a BMS, the customer must already have subscribed to an Organization. From the service portal available in the Cloud Customer Space, the Customer can order a BMS with the desired configuration.

The available models are described on the wiki page accessible here.

Available operating systems are listed here.

## 6.4.4 Server management

### 6.4.4.1 Server access

The server is connected to the customer's network and can be accessed by several methods, detailed here.

### 6.4.4.2 Storage

The storage provided is of the "dedicated storage" type, connected in SAN to the server.

Further details are available here.

### 6.4.4.3 Backup

The customer can back up the contents of the BMS in several ways:

- Via the NetBackup agent, a standard Cloud Avenue service
- Via a solution local to the BMS, connected to network storage for storing backup sets.

### 6.4.4.4 Management actions

Current management actions are available via a change request, submitted from the Cloud Customer Space.

## 6.4.5 Lun Service on BMS

Cloud Avenue's Logical Unit Number (LUN) service on Bare Metal Servers (BMS) provides dedicated, high-performance storage units for operating system installation and data storage. Each BMS server benefits from two types of LUN:

- System LUN :

- for operating system installation. The minimum orderable size is 100GB with performance classes Gold (1000-10000 IOPS), Platinum 3K (1000-30000 IOPS), and Platinum 7K (1000-70000 IOPS).
- Number: 1
- Increment: 1GB
- Performance :
  - 1000 iops for size <= 1TB
  - iops/TB for size >= 1TB

- Data LUN: (additional number authorized subject to review and approval)

- used to store application data. Minimum orderable size is 100GB with performance classes Silver (60-6000 IOPS), Gold (100-10000 IOPS), Platinum 3K (300-30000 IOPS), and Platinum 7K (700-70000 IOPS).
- Number: 10
- Increment: 1GB
- Performance:
  - iops/TB for size >= 1TB

LUNs guarantee high-performance storage and increased flexibility, enabling customers to choose the capacity and performance tailored to their specific needs.

## 6.4.6 Limitations

As the BMS is managed by the Customer using the tools provided by Cloud Avenue, it is the Customer's responsibility to back up and restore data (if necessary).

In the event of a hardware failure, the BMS will be replaced within the timeframe specified in the contract and detailed in the Quality of Service appendix. The replacement BMS will be delivered with the same configuration as the previous BMS. It is the customer's responsibility to restore customized configuration parameters, software and application data.

## 6.4.7 Billing model

The BMS is invoiced for a full month, except for the month of subscription, when it is invoiced "prorata temporis".

### 6.4.8 Termination

The BMS may be terminated at any time. Any month already started will be billed in full.

## 6.5 Bare Metal Server GPU (BMS GPU) Overview

The BMS service provides a dedicated server on which the customer can install an operating system chosen from a predefined list.

### 6.5.1 Overview

The BMS GPU service provides dedicated servers optimized for computation-intensive and artificial intelligence workloads.

These servers are equipped with NVIDIA graphics cards.

Several configurations are available to meet different AI use cases: SLM/LLM training, RAG,

Several configurations are available to meet different AI use cases: SLM/LLM training, RAG, inference, FineTuning.

### 6.5.2 Location

The BMS GPU service is only available at the Val de Reuil site in France.

### 6.5.3 Subscription

To order a BMS GPU, the Customer must already be subscribed to an Organization.

All information relating to subscribing to the GPU BMS service, available models, and available operating systems is described on the wiki page accessible [here](#).

### 6.5.4 Server management

#### 6.5.4.1 Server access

The server is connected to the Customer's network and can be accessed using several methods detailed in the wiki page.

#### 6.5.4.2 Storage

The storage provided is of the "local storage" type.

In order to optimize performance and storage capacity, additional disks can be added as an option

for GPU BMSs, within the limits of the number of available slots.

#### 6.5.4.3 Backup

The Customer may back up the contents of the GPU BMS using its own local solution, installed by the Customer, connected to network storage for storing backup sets.

#### 6.5.4.4 Management actions

Day-to-day management actions are available via a change request, submitted from the Cloud Customer Area.

### 6.5.5 Limitations

As the GPU BMS is managed by the Customer using the tools provided by Cloud Avenue, it is the Customer's responsibility to back up and restore data (if necessary).

When a GPU BMS experiences a hardware failure, the Service Provider will replace it as soon as possible.

The replacement GPU BMS will be delivered with the same configuration as the previous GPU BMS. It will be the Customer's responsibility to restore the custom configuration settings, as well as the software and application data.

### 6.5.6 Billing model

The GPU BMS is billed for a full month, except for the month of subscription, when it is billed on a pro rata basis.

In addition, installation fees will be charged when the GPU BMS is activated.

### 6.5.7 Termination

The GPU BMS may be terminated at any time. Any month that has already begun will be billed in full.

## 6.6 Licenses

The Customer undertakes to use the Software, in particular the operating systems, in compliance with the "Intellectual Property" article of the General Terms of the Provider.

All Windows and RedHat operating system licenses must be subscribed as part of the Cloud Avenue offer. The price list specifies the prices and billing methods for each license.

**Important:** when a Customer imports a VM via the VCD interface or APIs, and this VM includes a Windows or Redhat Operating System, the Virtual Machine will be automatically identified as carrying a billable license, and will be subject to normal billing the month following its import.

For more explanations on the available licenses and their use, go to the Cloud Avenue wiki at this address:

<https://wiki.cloudavenue.orange-business.com/w/index.php/Licenses>

### 6.6.1 Microsoft licenses

#### 6.6.1.1 Overview

Microsoft licenses are available from VM templates available in the public catalog visible in the vCloud Director portal. The following software can be obtained in this way:

- Microsoft Windows Server
- Microsoft SQL Server

If the Customer deploys VMs with a Microsoft Windows 7.x/8.x./10.x or later version, the Customer must purchase the corresponding license himself. Only Windows Server versions are authorized.

The Customer can:

- either subscribe to Microsoft Software licenses from the Service Provider in rental mode
- or bring licenses subscribed by him directly to Microsoft or a third-party reseller in mobility mode, according to the conditions of use applicable to each Software, available at the following address

<https://www.microsoft.com/fr-fr/Licensing/product-licensing/products.aspx>

Customer's use of Microsoft Software must comply with the terms of use associated with the Microsoft Service Provider License Agreement (SPLA). <https://www.microsoft.com/en-us/licensing/licensing-programs/spla-program>

#### 6.6.1.2 Billing Model

The Microsoft licenses offered by the Provider are in rental mode, the Customer must not use the corresponding licenses for any other use than the use of the Service subscribed to the Provider.

Licenses	Work unit	Minimum unit of work invoiced	Calculation basis for invoicing
Windows	VM vCPU	Day	Number of active VM vCPUs by performance class
Windows	Physical server (blade)	Month	Number of physical server cores
SQL Server	VM vCPU	Month	Number of VM vCPUs, with a minimum of 4 vCPUs billed, and necessarily a multiple of 2.

#### 6.6.1.3 License mobility (BYOL)

Microsoft license mobility, for software previously acquired by the Customer, is possible in accordance with the "License Mobility" or "Qualified Multi-Tenant Host" (QMTH) endorsements of the SPLA contract, depending on the Software concerned.

It is reminded that the Customer must, in particular, in order to benefit from the Service:

- to have subscribed to the "Software Assurance" (SA) from Microsoft, when required by Microsoft, which is an additional license to enable mobility.
- for License Mobility, declare the mobility to Microsoft, indicating ORANGE's references as a mobility partner, via a specific form published by Microsoft and provided to the Customer by the Service Provider on request.
- for QMTH, declare to the Service Provider the number of Users for each Software concerned.

To use the Windows software under its own SPLA contract with Microsoft on Cloud Avenue, the Customer must subscribe to a dedicated cluster to host the VMs that will carry these licenses. The Customer must provide Microsoft with the hardware inventory on which the licenses are used.

#### **6.6.1.4 Software licenses to be provided by the Customer**

Licenses not provided by the Service Provider's SPLA contract are deemed to be provided by the Customer. This includes Microsoft Office and Microsoft Remote Desktop Service (RDS) licenses, which are no longer in the Cloud Avenue catalogue since December 2021.

### **6.6.2 Redhat licenses**

#### **6.6.2.1 Overview**

Redhat licenses are available from the vendor based on VM templates available in the public catalog visible in the vCloud Director portal.

#### **6.6.2.2 Billing model**

Licenses	Work unit	Minimum unit of work invoiced	Calculation basis for invoicing
Redhat	VM Small	Day	VM with 1 to 4 vCPUs
Redhat	VM Large	Day	VM with more than 4 vCPUs

#### **6.6.2.3 License mobility (BYOL)**

The mobility of Redhat licenses is not possible on Cloud Avenue. The Customer must subscribe to Redhat licenses from the Provider.

## 6.7 Network and security

### 6.7.1 Overview

Network and security settings are configured by the Customer in the vCloud Director portal. These features are carried by infrastructure VMs (NSX Edge Gateways) and carry a network and security context dedicated to each Customer.

Visit the wiki at this address: <https://wiki.cloudavenue.orange-business.com/w/index.php/Network> for the detailed description of the functionalities, and the possible architectures.

### 6.7.2 Billing model

Cloud Avenue is based on the VMware NSX-T technology. Basic functionalities integrated in this software are available at no extra cost for the Customer, as soon as the first vDC is subscribed. Additional features are available as an option depending on the choice of the gateway type.

For a detailed description of the features and functionality of the NSX-T gateways, go to the wiki at this address:

<https://wiki.cloudavenue.orange-business.com/w/index.php/Network>

NSX Edge Gateway	Class of service	Billing
T0 VRF	Standard	Per month and per gateway
T0 VRF	Premium	
Dedicated T0	Medium	
Dedicated T0	Large	
T1	Standard	
T1	Premium	
Dedicated T1	Medium	
Dedicated T1	Large	

NSX-T Security Context	Billing
First vDC group	Included in connectivity purchase
Additional vDC group	Per month and per vDC Group

## 6.8 Internet access

### 6.8.1 Overview

The internet access is provided by the operator Orange and incorporates services to secure both the availability of access, and the transiting traffic: it is a shared access for all Cloud Avenue platform customers, and located in each datacenter.

The Internet connection is made via a T0 gateway for a given organization: it can be shared by all the organization's vDCs.

More details on the wiki page: [https://wiki.cloudavenue.orange-business.com/wiki/Internet\\_access](https://wiki.cloudavenue.orange-business.com/wiki/Internet_access)

### 6.8.2 Billing model

There are two billing models for internet traffic:

Description	Billing Unit	Billing basis
Bandwidth usage Limitation: a limit exists via the size and configuration of the T0 access and T1 gateway in place - see "Network and security" above.	Mpbs	Maximum flow rate based on the 95th percentile
Outgoing traffic by volume	Gb	Volume of outgoing Internet traffic.

NB1: The default billing mode is "Bandwidth usage", which can be changed to "Outgoing traffic" by API.

NB2: Only outgoing bandwidth/outgoing traffic is billed.

### 6.8.2.1 Public IP addresses

Public IP address ranges are billed by the day, starting from the date they are set up in the Customer's configuration. A change request allows public IPs to be restored. They are then no longer billed as soon as they no longer appear in the Customer's configuration.

Public IP addresses can be ordered on the Cloud Customer Space or on the change request management portal.

## 6.9 Storage

### 6.9.1 Overview

Three types of storage are available:

- datastore storage, for VMDK files
- network storage, with NFS and CIFS protocols
- object storage

The different types of storage and their classes of service are specified in the Price List and described on the wiki at this address: <https://wiki.cloudavenue.orange-business.com/w/index.php/Storage>

### 6.9.2 Datastore storage

Datastore storage is made available to VMs in a vDC through storage profiles, which VMs can draw from to provision their disks. The size of a VMDK file is limited to 2 TB. When a VM needs more than 2TB of storage, multiple VMDK files must be added to the VM to reach the target size. For a BMS, block storage is presented in the form of LUNs on a SAN network, connected via high-speed fiber optic.

External storage is made available to VMs via IP addresses and according to the protocols chosen by the Customer.

Datastore storage is provided in two modes:

- shared storage (default),
- dedicated storage, with performance guarantee.

#### 6.9.2.1 Service classes

For each vDC performance class, one or more storage performance classes can be associated.

The characteristics and availability of these service classes are detailed on the following wiki page:

[https://wiki.cloudavenue.orange-business.com/wiki/Stockage\\_r%C3%A9seau](https://wiki.cloudavenue.orange-business.com/wiki/Stockage_r%C3%A9seau)

### 6.9.2.2 Billing

#### 6.9.2.2.1 Shared datastore in PAYG

The storage considered is the maximum space occupied during a day by:

- each VM, including the space used by the VM and by the snapshot possibly made by the Customer
- the Templates and ISO images present in the Customer's private catalog
- The technical files of the VM such as the VMware swap file also consume space, but are not charged.

The storage sizing of a vDC ordered by the Customer must consider:

- the virtual disks of the VMs that will be created in this vDC

- the RAM of the VMs
- possibly space to perform a snapshot.

#### 6.9.2.2.2 Shared datastore in subscription

The storage considered is the average storage allocated to the vDC during the reference month.

## 6.10 Dedicated Storage

### 6.10.1 Overview:

A datastore is dedicated to a client, meaning that only the virtual machines chosen by the client can use this storage space, allowing the client to make the most of the available IOPS. This type of storage is available:

- ✓ in a single room and, for certain classes, in dual room or dual room HA (on a storage Metrocluster)
- ✓ with or without data encryption.

### 6.10.2 Classe of services:

The order of a dedicated datastore is possible for all the underneath classes of services:

Service classes	Performance	Minimum size	Availability for vDC		
			One Room	Dual Room	HA Dual Room
Silver	600 IOPS / TB	8 To	■	■	■
Gold	1000 IOPS / TB	6 To	■	■	■
Gold MetroCluster	1000 IOPS / TB	6 To	■	■	■
Platinum 3K	3000 IOPS / TB	4 To	■	■	■
Platinum 3K MetroCluster	3000 IOPS / TB	4 To	■	■	■
Platinum 7K	7000 IOPS / TB	4 To	■	■	■
Platinum 7K MetroCluster	7000 IOPS / TB	4 To	■	■	■

The amount of IOPS delivered corresponds to the amount of storage ordered multiplied by the IOPS/GB of the subscribed service class.

Important: In the case of a dedicated datastore, the deduplication mechanisms built into the storage devices benefit the client. Therefore, if the client deploys multiple VMs based on the same template, it will significantly increase the deduplication rate, consequently limiting the total amount of storage billed to the client.

### 6.10.3 Billing

The storage considered is the average storage reserved by the client during the reference month.



## 6.11 Network storage

### 6.11.1 Overview

Network storage is shared by the Customer's organization VMs and BMS. Network storage is systematically provided in dedicated mode.

### 6.11.2 Service classes

The characteristics and availability of these service classes are detailed on the following wiki page:

[https://wiki.cloudavenue.orange-business.com/wiki/Stockage\\_r%C3%A9seau](https://wiki.cloudavenue.orange-business.com/wiki/Stockage_r%C3%A9seau)

### 6.11.3 Billing

The storage considered is the average storage reserved by the Customer during the reference month.

The quantity of IOPS provided corresponds to the volume of storage ordered times the number of IOPS/Gb of the subscribed class of service.

### 6.11.4 Backup

The Customer can set up the snapshot policy for its network storage. The space used by the snapshots is deducted from the quota subscribed by the Customer. Depending on the policy chosen, the Customer can reserve between 5 and 20% of the total storage quantity subscribed to for snapshots. However, snapshots can be activated even without reserved space.

### 6.11.5 Availability

The service is available on the Datacenter of Val de Reuil.

### 6.11.6 Management portal

A self-service portal is provided to the Customer for network storage management, accessible from a specific self-care portal.

## 6.12 Object storage

### 6.12.1 Overview

The object storage service allows the storage of objects composed of data and metadata in a storage account associated with the Customer's organization. These objects are accessed securely from the Internet or from the vDC of the organization via an internal network. Objects are stored in compartments (buckets).

Storage and handling of objects and compartments is possible via a REST S3 API powered by Scality© and compatible with Amazon Web Services or via the VCD console object storage menu (menu exposed by OSE plugin, VMware Cloud Director Object Storage Extension). Access security to the storage account is managed through users, groups and access control via the REST IAM API compatible with Amazon Web Services.

This object storage service is also natively integrated with other services provided by VCD, such as VM image import, private image backup, or snapshot storage. Once the object storage option is enabled, these services will by default store the data necessary for their operation on the object storage rather than on the «datastore» storage.

### 6.12.2 Subscription

Each Cloud Avenue Customer has potential access by default to the object storage option. The option is automatically enabled when the Customer accesses the object storage menu in the organization's vCloud Director (VCD) console.

This action will create an object storage account with the name of the relevant Organization as the account name. From then on, it will be possible to create buckets (compartments) to store the Customer's data and to share them, if necessary, between the different vDC of the organization.

### 6.12.3 Availability

The service is available at the Val de Reuil Datacenter.

The architecture of the service ensures very high data resilience. The durability rate of the objects is 99.999999999% (11 9s), which is a probability of losing 1 object every 100,000 years per million objects (apart from severe losses affecting several bays).

### 6.12.4 Capacity management

The capacity management of the subject storage account is the responsibility of the Customer.

The scalability of the stored volume is almost unlimited (several Peta bytes/ Customer account).

### 6.12.5 Limits

Internet access is by default open to data from the object storage account. It is the Customer's responsibility to ensure that this possibility meets its requirements and to apply a policy of filtering Internet access if necessary.

### 6.12.6 Billing model

Billing is monthly and pay as you go.

It is carried out at least according to the average hourly volume expressed in GiB.

The Cloud Avenue Rate Sheet specifies the invoiced work units.

### 6.12.7 Commitment & termination

There is no time commitment for the Customer in a usage-based billing model.

The customer is solely responsible for the stored data. They must have deleted all objects, compartments, users, groups, security policies, etc. and have a blank account before requesting a termination of the option.

### 6.12.8 Services in the ADMIN zone (SUO)

The ADMIN zone is a service zone, accessible by the VMs through a specific Organization network, and carrying several services:

- Trend Micro Antivirus
- Windows and RedHat license activation
- Update of Windows and RedHat OS
- Access to backup servers (for backup/restore of VMs using an agent)
- Access to mail relay gateways
- NTP server

The availability of these devices allows to avoid the internet exposure of the VMs.

**Note:** All virtual machines in a single Organization (vOrg) can be connected to this service area via an organization network shared by all vDCs in the Organization. The connected virtual machines have a second IP interface (virtual Ethernet card) and share the same IP addressing plan. They can technically communicate with each other. If the Customer wants to keep the trust zones set up on the other Organization networks on this ADMIN network, the Customer must configure security rules using the configurable distributed firewall for each vDC in the Organization.

### 6.12.9 Antivirus

Each Windows template includes a Trend Micro antivirus agent, which automatically updates its signature database from the central console not accessible to the Customer.

### 6.12.10 License Activation

The ADMIN area hosts a KMS server for Windows license activation. The Windows templates of the Cloud Avenue public catalogue are preconfigured and can be easily activated. For VMs imported or created from the VCD catalogues, a procedure is provided to the Customer so that he can perform the operations manually to make the operating system activatable via the ADMIN zone. This procedure is available on the wiki at this address:

[https://wiki.cloudavenue.orange-business.com/w/index.php/Activer\\_la\\_licence\\_Windows\\_%27%27\(KMS\)%27%27](https://wiki.cloudavenue.orange-business.com/w/index.php/Activer_la_licence_Windows_%27%27(KMS)%27%27)

For Redhat VMs, the ADMIN zone hosts an RHN infrastructure to activate and update the operating systems.

### 6.12.11 OS update

The ADMIN zone includes a WSUS server that allows Windows VMs to be kept up to date. Similarly, for Redhat VMs, the RHN infrastructure present in ADMIN gives access to the Redhat repository.

### 6.12.12 Access to backup servers via the NetBackup agent

In case a NetBackup agent is installed, the VM must have access to the ADMIN zone for the agent to communicate with the NetBackup servers.

### 6.12.13 Access to SMTP gateways

The ADMIN area also hosts a complete infrastructure of outbound SMTP relay servers. They enable notifications to be securely sent from applications hosted on Cloud Avenue. These servers are protected by antivirus software.

This service is subject to certain technical limitations in terms of usage volume, which are detailed in the Wiki portal: it cannot be used for "mass mailing", but is suitable for technical use.

This service is charged on a per-use basis: please refer to the price list for further details.

You can subscribe to this service by submitting a change request via the Cloud Customer Space.

## 6.13 Backup

### 6.13.1 Overview

The backup solution offered on the Cloud Avenue platform is a shared solution available to all Customers using the following services:

- Virtual Datacenter
- vCenter On Demand
- BMS

The solution is located on the Val de Reuil Datacenter, in a room separated from those where the customer's VM are located.

**Important:** Backups are systematically encrypted for all Customers using the standard solution.

### 6.13.2 Operating principle

The solution allows you to apply one (or more) backup policy to a VM, vApp or vDC (the VMs contained in these containers will inherit the policy set up).

The solution is available in self-service through a dedicated portal called Netbackup Self-Service (NSS), accessible from the Cloud Customer Space. The features offered by the portal are also available via an API, documented in the Cloud Avenue wiki.

The Customer will be able to restore either the whole VM or a part of it (a directory, a file), from the NSS portal, without the need to install an agent.

From a list of predefined elementary policies, the Customer will be able to build his own backup plan adapted to his needs.

Visit the wiki at this address for more information on the Cloud Avenue backup service:

<https://wiki.cloudavenue.orange-business.com/w/index.php/Backup>

### 6.13.3 Billing model

Several elements are considered:

- The number of protected VMs
- The total disk size of each VM
- The total volume occupied by the backup sets kept on the backup storage, depending on the backup policies chosen by the Customer.

The Price List specifies the units of work invoiced for this service.

### 6.9.4 Commitments

The Quality-of-Service Appendix describes the commitments made by the Provider concerning the availability of the Backup service.

## 6.14 Cross Connect

This option, available only at the Val de Reuil and Chartres Datacenters, allows the connection of a customer's physical equipment located in an Orange Cloud Avenue Datacenter.

The Service Provider provides several types of connection:

- One 1 Gbps link

- Two 1 Gbps links in nominal/backup
- Two 1 Gbps nominal/backup links with link aggregation, bringing the nominal throughput to 2 Gbps
- One 10 Gbps link
- Two 10 Gbps nominal/backup links
- Two 10 Gbps nominal/backup links with link aggregation, bringing the nominal throughput to 20 Gbps

### 6.14.1 Prerequisites

Customer must:

- Already have an operational hosting area, in one or more rooms of the Datacenter
- Have the necessary network equipment to connect to the Service Provider's infrastructure
- Provide the necessary information for the physical connection (room / bay / equipment name / port) requested in the Order.
- Provide the configuration elements necessary for the proper functioning of the entire link chain.

### 6.14.2 Mutualized colocation switch option

The Provider offers a mutualized colocation switch option, providing an end-to-end connectivity solution between the Customer's Cloud Avenue tenant and its colocation rack in the Orange data center.

The Customer's switch is configured and monitored by the Provider. In terms of technical specifications, the Provider offers 1 to 10 ports.

### 6.14.3 Activating the "Cross Connect" option

The activation of this option is done in collaboration between the Customer's technical teams and the Provider's technical teams for the parameterization of the whole link chain. It can be ordered in the initial Order or requested via the Cloud Customer Space.

## 6.15 QoS Appliance

### 6.15.1 Overview

Quality of Service (QoS) refers to a mechanism for prioritizing the most important flows within a limited bandwidth.

Customers who use their BVPN access to connect to their Cloud Avenue hosted information system may experience contention issues when the subscribed bandwidth on the site's BVPN access is limited.

Real-time" applications, most of the time communication applications (IP telephony, videoconferencing, etc.) will suffer greatly from this contention and will have a significant drop in sound and image quality.

To avoid this, Quality of Service mechanisms must be put in place to prioritize the most critical ones.

### 6.15.2 Proposed Solution

Cloud Avenue offers an Appliance to perform this task of prioritizing the most critical flows. Each "QoS Appliance" is dedicated to one Organization, and one QoS is required per BVPN link.

There are three models of "QoS Appliance", sized to handle all flows within a maximum bandwidth.

QoS Appliance model	Max throughput of the Appliance
Small	50 Mbps
Large	500 Mbps
X-Large	2 Gbps

### 6.15.3 Prerequisites

The Customer must have a PVAG (Virtual Gallery Access Socket), as well as an Orange Business VPN Gallery contract with its usual Sales Agency.

The Customer's applications must use DSCP marking of network packets.

### 6.15.4 Billing model

Billing is done on a monthly basis, prorated to the number of days in the month that the QoS Appliance was active, based on the current rate card.

### 6.15.5 Setting up

The QoS Appliance is set up from the Cloud Customer Space. It is hosted in a secure area of the Cloud Avenue platform and maintained in operational conditions by the Provider's Operations teams.

The Cloud Customer Space provides dashboards to monitor indicators that allow the Customer to visualize

- The correct sizing of the bandwidth subscribed to on the BVPN side
- The distribution of the various flows and the processing of these flows by the QoS Appliance

These elements are not binding on the Service Provider but allow the Customer to ensure that its service is functioning correctly.

### 6.13.6 Limitation of liability

The Provider is committed to the availability of the QoS Appliance, in the same way as the rest of the Cloud Avenue infrastructure made available to the Customer. See the Quality-of-Service Appendix for details.

The Service Provider shall not be held responsible for a poor quality of service **if the bandwidth subscribed by the Customer** for its Orange BVPN access **is undersized**.

## 6.16 OpenShift as a Service (OpenshiftaaS) (Beta Version)

### 6.16.1 Overview

OpenShift as a Service (OpenShiftaaS) is a managed container orchestration solution offered on Cloud Avenue, designed to simplify the deployment and operation of Kubernetes clusters. Based on the OpenShift platform, it provides a secure, scalable and ready-to-use environment for hosting containerized applications.

The Service enables container orchestration on virtualized infrastructures such as vCloud Director (vCD). The infrastructure is fully managed by the Service Provider's technical teams, which are responsible for the administration of the Control Plane and provide operational support for each Customer's Data Plane.

The Service is offered in its beta version and is available to selected Customers, with dedicated support provided by the Cloud Avenue team.

### 6.16.2 Availability

The OpenShift as a Service (beta version) is available at the Val-de-Reuil site for a limited number of Customers. It is deployed on the Cloud Avenue IaaS infrastructure (vCD).

### 6.16.3 Subscription

To subscribe to the OpenShiftaaS Service, the Customer must be an IaaS vCloud Director Customer.

The activation request must be submitted by email to the following address:

[gps.cavcaas@orange.com](mailto:gps.cavcaas@orange.com)

The request must include the following information:

- VCD tenant name (hosting the Worker Nodes)
- Desired cluster name (used as the primary project identifier)
- Ingress VIP to be used (management of external traffic entry points)

**Note:** The cluster name is used as the primary identifier for technical components and associated metadata.

### 6.16.4 OpenShift Installation

The installation of the OpenShift cluster is performed by the Cloud Avenue team. The entire Control Plane is managed by Cloud Avenue, ensuring high availability and controlled updates.

Worker Nodes are deployed within the Customer's IaaS tenant (vCD) and may be scaled in capacity according to the Customer's needs.

### 6.16.5 Available Services and Features

The OaaS Service includes a set of features enabling full management of OpenShift clusters, including:

- Container orchestration and management via the OpenShift Console
- Integrated management of projects, namespaces and users
- Integrated basic monitoring and alerting
- Support for CI/CD deployments
- Integration with Cloud Avenue IaaS for storage and networking

For further technical details and the complete list of available services, please refer to the official documentation:  
<https://cloud.orange-business.com/offres/infrastructure-iaas/cloud-avenue/wiki-cloud-avenue/listede...>

### 6.16.6 Limitations

The beta version of the OpenShiftaaS Service includes certain limitations:

- Availability limited to a single site (Val-de-Reuil)
- Limited number of clusters per Customer
- OpenShift extensions support limited to the standard Cloud Avenue configuration

### 6.16.7 Billing Model

The OpenShiftaaS Service is billed on a monthly basis. Any month commenced is billed in full.  
Billing is based on:

- The number of OpenShift clusters deployed
- The number of 4 vCPU packs used by the Worker Nodes
- Red Hat OpenShift licenses: billed at the actual cost of the Red Hat license associated with each cluster, in accordance with the applicable pricing defined in the Cloud Avenue catalog

### 6.16.8 Termination

The OpenShiftaaS Service may be terminated by the Customer at any time. Termination of the Service results in the deletion of the cluster and the release of the associated resources (Compute, Network, Storage) within the Customer's tenant.

## 7 Support

The following table describes the support offering for the Cloud Avenue Service.

The Beta Features do not give rise to any support commitment on the part of the Provider.

Support offer for the Cloud Avenue service	STANDARD	BRONZE	SILVER	GOLD
Customer Service				
Cloud Avenue documentation on the <a href="#">wiki</a>	included			
Account and billing questions	Business hours			
Technical Support				
Datacenter supervision 24x7	included			
Ticket via the Cloud Customer Space	ticket received 24x7			
Ticket via telephone	yes			
Privileged access to experts (e-mail or telephone)	no	yes, the first 3 months	yes	yes
Number of hours of expertise included in the package	n/a	2h / month, the first 3 months	2h / month	4h / month

**\*Managed tenants Support:**

Customers subscribing to Managed Applications benefit from a dedicated support level, with commitments and obligations identical to those defined under the GOLD Support level.

## 8 Supporting and expertise services

Once you benefit from the Cloud Avenue offer, we offer you services to support you in the use of your cloud offer.

. These services can be ordered via the Cloud Customer Space, and are described in the table below:

Supporting services	Duration	Content
<b>Cloud avenue L1 guidance</b>	4 hours	<p>The objective of this service is to introduce the Customer to the platform interface and help the Customer start implementing their Cloud Avenue tenant. In specific the basic elements: management of VMs, network and backup.</p> <ul style="list-style-type: none"><li>- Discovery of the interface VCD</li><li>- Configuration of the organisation</li><li>- Install of VM</li><li>- Raccordement réseau</li><li>- Les catalogues</li><li>- Utilisation des vApp</li><li>- Déploiements de vApp</li><li>- Gestion des droits et des utilisateurs</li><li>- Configuration de la passerelle Edge (NSX)</li><li>- Netbackup : configuration, protection, et restauration</li></ul>
<b>Cloud avenue L2 guidance</b>	8 hours	<p>The objective of this service is to introduce the Customer to the components of their tenant that implement more advanced features related to security, performance, and object storage.</p> <p>Advanced configuration of Edge gateways (NSX) Distributed firewall VPN Load balancer Individual connection to administration tools (NTP, KMS, WSUS, TrendMicro) API introduction Object storage</p>

Supporting services	Duration	Content
<b>Cloud avenue L1 &amp; L2 guidance</b>		The Customer can also order both levels of guidance service at the same time.
<b>Cloud avenue API guidance</b>	4 hours	<p>The objective of this service is to assist the Customer in using the two APIs offered by Cloud Avenue:</p> <ul style="list-style-type: none"> <li>○ The vCloud Director API, the VMware component that allows the Customer to manage their compute resources — for example, creating, suspending, or deleting VMs. This API allows the Customer to automate everything the Customer can do via the vCloud Director technical console.</li> <li>○ The Cloud Avenue API, which allows the Customer to manage their other Cloud Avenue resources: T0 and T1 gateways, VDCs, IP addresses, etc. This API allows the Customer automate all operations the Customer can perform on their cloud resources via the "Services" tab of the Customer 's Cloud Customer Portal.</li> </ul> <p>Included in this service:</p> <ul style="list-style-type: none"> <li>• Introduction to the API</li> <li>• Using the API in RESTful mode</li> <li>• Learning through examples</li> <li>• Presentation of SDK usage</li> <li>• Sample project using the API</li> </ul>



Supporting services	Duration	Content
<b>vCenter On Demand guidance</b>	2 sessions of 4 hours	<p>The objective of this service is to help the Customer build and configure their vCOD so that it best meets the Customer 's needs.</p> <p>Link/term</p> <ul style="list-style-type: none"> <li>• <b>vCenter</b>: Overview, hosts, VMs (creation, snapshots, scheduled tasks)</li> <li>• <b>NSX</b>: Overview, permissions, T1, T0, segments, NAT, firewall, troubleshooting</li> <li>• <b>vROps</b>: Creating a custom group, view, dashboard, report</li> <li>• <b>vRLI</b>: Real-time host/VM logs, dashboard, report</li> <li>• <b>NetBackup</b>: Configuration, backup policy, VM/file restoration</li> </ul>
<b>Expertise pack</b>	2 types of pack available, 4 hours and 8 hours	<p>If the Customer needs access to the Provider's experts for a specific use case, the Provider will work with the Customer to assess their needs and jointly define the appropriate pack size.</p> <p>The Customer can also consult the Provider's experts on an ad hoc basis for usage support, until the pack is fully consumed.</p>
<b>DRaaS setup</b>		<p>The goal of this service is to help the Customer implement Cloud Avenue's DRaaS (Disaster Recovery as a Service) solution to ensure the protection and rapid recovery of their data and applications in the event of a disaster. The Provider will assist in setting up a secure and scalable infrastructure, enabling smooth and efficient business recovery.</p>

Supporting services	Duration	Content
<b>DRP setup</b>		<p>The objective of this service is to help the Customer implement a DRP (Disaster Recovery Plan) between our two data centers (Val-de-Reuil and Chartres), in order to guarantee the continuity of their essential services in the event of a major incident. the provider will help the Customer define and implement backup and restoration procedures to limit interruptions and ensure the resilience of their operations.</p>
<b>Dedicated Tech Lead (monthly recurring)</b>	ordered by day(s) per month	<p>Personalized Assistance and Guidance from a Virtualization Expert</p> <p>The customer will benefit from a dedicated contact person responsible for handling requests and providing support in using the solution.</p> <p>The first order of this service includes a mandatory 3-month commitment period, during which cancellation is not possible. Subsequent orders are not subject to this commitment period: the customer may therefore freely cancel the purchased days after the initial commitment period.</p> <p>After the initial period, the customer may cancel at any time; however, any month that has already begun remains fully payable, even if cancellation occurs during the month.</p>

## 9 Service Limitations

### 9.1 VCD access security

Access to the vCloud Director portal is from the Internet. The standard (default) security level is password protection.

When the first administrator account is created by the Provider, the password is created according to the password security policy defined by the Provider (e.g., 14 characters, etc.). On the other hand, the Customer is totally autonomous to create new VCD accounts.

We recommend that you configure passwords in a secure manner:

- In accordance with your security policy.
- Or by referring to the password security guide proposed by the ANSSI (National Agency for Information Systems Security): [https://www.ssi.gouv.fr/uploads/IMG/pdf/NP\\_MDP\\_NoteTech.pdf](https://www.ssi.gouv.fr/uploads/IMG/pdf/NP_MDP_NoteTech.pdf)

The configuration of password security is the responsibility of the Customer's administrators.

### 9.2 Strengthen the security of access to the VCD portal

The vCloud Director portal includes a feature to delegate authentication to an external identity provider, managed by the Customer. The Provider recommends using this feature for security reasons.

Some "identity provider" software may also include "strong authentication" functionality, which may be necessary in some cases to meet the requirements of the Customer's general security policy.

This setting is made by the Customer in the configuration of its organization. The documentation on this subject is described in detail in the chapter "Enabling your organization to use a SAMLv2 access provider" in the user guide:

<https://docs.vmware.com/fr/VMware-Cloud-Director/9.7/com.vmware.vcloud.tenantportal.doc/GUID-1F1F3EFD-55C5-4BF7-8683-FD93184A402F.html>

Some of our customers are already successfully using the following software:

- In-Webo
- Microsoft ADFS

### 9.3 VM sizing

The number of vCPUs in a VM must be a whole number (a VM cannot have, for example, 1.5 vCPUs). In PAYG, the vCPU frequency is aligned with the physical CPU frequency, following VMware best practices, to guarantee the best performance to the Customer.

**Important:** Virtual machines created by the Customer must comply with the limits specified in the paragraph "Characteristics of vDCs according to service classes". VMware's best practices recommend avoiding large VMs, as they will have a much harder time obtaining their resource quota when compared to smaller VMs. The Service Provider recommends that multiple VMs be preferred over one large VM, when the application architecture allows.

If the Customer does not respect the limits, the Service Provider will not be able to provide support services under the terms of the Agreement.

When a customer wishes to host very large VMs (> 8 vCPUs), it will be necessary to consider a "high performance" class vDC, or a vDC built on a dedicated cluster.

### 9.4 VM storage

A VM is created with a minimum amount of storage space that is required to support the Operating System, called the "root disk". This minimum space cannot be changed or deleted and is tied to the Operating System installed on the VM. If the available disk resources of the vDC are not sufficient to support this minimum space, then it is not possible to create the Virtual Machine.

### 9.5 Limit of a virtual disk (vmdk)

A VM virtual disk should not exceed 2TB. Beyond this limit, the VM will continue to function normally, but the efficiency of the high availability and load balancing mechanisms will be affected, or even severely disrupted. The backup will also work normally. However, restores will not work. Therefore "out-of-gauge" VMs can only benefit from "Best Effort" support.

## 9.6 Supported operating systems

The current version of Cloud Avenue is based on ESXi version 8.0 or greater.

The following link allows you to validate the compatibility of the supported Guest OS.

<https://www.vmware.com/resources/compatibility/search.php?deviceCategory=software&testConfig=16>

Note: some operating systems that have been out of support for too long (end-of-life) may not support the hardware deployed on the platform, which is quite recent. Any consequences linked to this too-old OS (instability, incompatibility, malfunction or refusal to start the VM) will not be covered by our service commitments.

## 9.7 Backup and VM size

The backup system proposed in the Cloud Avenue offer is designed for VM sizes respecting the authorized limit of 6 TB. This value is the maximum allowed. If a VM's storage exceeds the limit, it is possible that this VM cannot be backed up within the time window reserved for running backups (10:00 pm - 6:00 am).

Any VM backed up that exceeds the limit will not be considered in the calculation of the service level agreement. The customer may be asked to withdraw the protection of this VM, on the grounds that the backup of this VM could have negative consequences on the backup of other VMs.

## 9.8 Mandatory up to date "Vmware tools" software

The backup mechanisms (excluding the backup agent) are based on the VMware layer and require the VM to have an up-to-date version of the "VMware tools" software. Most backup failures are due to outdated versions of VMware tools. It is therefore the Customer's responsibility to keep the VMware tools software up to date.

In case of repeated failure of the backup of a VM due to an obsolete version of VMware tools, and this despite several reminders to the Customer from the operating teams of the platform requesting this update, the Provider will be obliged to disable the protection attached to the virtual machine, which will then appear in the list of unprotected VMs in the NSS console.

The Provider cannot be held responsible for any data loss if the VM is not properly backed up due to an outdated version of the "VMware tools" software.

## 9.9 Network Storage (NFS)

The minimum value of an NFS volume is 500 GB.

The maximum value of an NFS volume is 8 TB.

## 9.10 Unsupported Hardware Features in VMs

The virtual servers provided in the Cloud Avenue offer do not support the following hardware elements

- graphics card (GPU)
- sound card

These hardware elements are often required to use the virtual machine as a workstation (VDI), a feature not currently available in the Cloud Avenue offer.

## 9.11 Cryptographic calculation (SSL Offload and IPsec)

Encryption for Advanced Encryption Standard New Instructions (AES-NI) is performed directly by the NSX Edge virtual appliances.

## 9.12 Security rules on the administration network (ADMIN)

The VMs of the same Organization connected to the ADMIN administration network are by default all in communication with each other, even if trust zones have been set up on the other network interfaces. It is the Customer's responsibility to set up filtering rules for the administration network using the distributed firewall, so that no data is accessible to an unauthorized User. It is the Customer's responsibility to set up this configuration correctly.

## 9.13 Dual Room

The Dual Room feature is only available on the Val de Reuil site.

## 9.14 Data location

By default, all a customer's data is located in a single Datacenter. To outsource data to another Datacenter, the customer must subscribe to one of the following services, depending on the desired RTO:

- Outsourced backup policies
- VM replication service with VCDA

## 9.15 Protection against data corruption

By default, Customer data is not backed up. It is the Customer's responsibility to take the necessary measures to protect against data corruption, regardless of the source of the corruption.

In the event of a corrupted VM, if the Customer has not implemented a VM backup plan, the Service Provider will not be able to restore the data before corruption.

VM replication is not a protection against data corruption.

Cloud Avenue's integrated backup solution is available to all Customers and allows them to restore all or part of a VM in the event of VM corruption.

The operating procedures for backup on Cloud Avenue are available here: <https://cloud.orange-business.com/offres/infrastructure-iaas/cloud-avenue/wiki-cloud-avenue/accueil/index/>

## 9.16 Additional security measures

The Service Provider reserves the right to apply all measures that it considers necessary for the security of the service: hardening, versions/patching, configuration, scripts and agents, security functions, Anti-virus, version upgrade in the event of obsolescence.

Consequently, the Service Provider cannot in any way be responsible in the event of compromise of one or more Equipment, made possible by the obsolescence of this Equipment(s) or the absence of updating of the security level of the Equipment. / Equipment(s) or by deactivation by the Customer.

## 9.17 Confidentiality

The Service Provider does not provide any information to third parties concerning the services provided to its customers or the data of its customers, except with the express written consent of the customer concerned.

## 9.18 Data Access

By default, the Provider does not have access to the customer's data. The Service Provider cannot access the VM content, nor connect to the VM administration console, once the default password has been changed.

The virtual disks of the VMs are not readable other than by the VM itself, and therefore under the total and exclusive control of the Customer.

## 10 Reversibility

The Customer is responsible for recovering all or part of the data hosted on Cloud Avenue.

Several means are available on Cloud Avenue:

- Exporting VMs in OVA format, from the vCloud Director portal or via API
- Replication of VMs to another VMware infrastructure that supports vCloud Director Availability

It is possible to subscribe to support services for a reversibility project with the Provider.