



Technical Appendix to the Managed Applications Service Description – Managed Database

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1 Definitions

In addition to the definitions of the General Conditions and the Specific Conditions Integration Maintenance and Associated Services, the following specific definitions apply to this Service Description.

DB: database allows to store and retrieve structured, semi-structured data or raw data or information, often related to a theme or activity; these can be of different natures and more or less related to each other.

IaaS (Infrastructure as a Service). It is a cloud computing service model that provides users with core computing resources such as virtual machines, storage, and networks, as well as features such as management and scaling, without the need to manage the physical infrastructure itself. Organizations can use IaaS to gain greater flexibility, lower costs, and better scalability for their IT operations.

Token means the unit of work used to express the prices applicable to the changes requested by the Customer, as indicated in the Price Sheet.

2 Object

The purpose of this service description is to define the conditions under which the Service Provider provides the «Database Managed» service (hereinafter the «Service») to the Client.

This description is attached to the Specific Conditions Integration Maintenance and Associated Services.

3 Presentation of the Service

As part of this service, we manage your DB hosted on an IaaS Public Cloud infrastructure listed below.

- Cloud Avenue (the Provider)
- Flexible Engine (the Provider)
- AWS (partner)
- Microsoft Azure (partner)
- Google Cloud (partner)

3.1 Services included

As part of the 2 DB Full Managed and DB Co-Managed offers presented above, the following services are included:

3.1.1 Infrastructure

The choice of the infrastructure is made according to performance and availability needs (single-site or multi-site redundancy, disaster recovery, business continuity).

3.1.2 Databases in the catalogue

Solution	Features
PostgreSQL	<ul style="list-style-type: none"> ▪ PostgreSQL Standalone. ▪ PostgreSQL Master-Slave for high availability with manual or automatic recovery. ▪ Logical or physical backup with native tools. ▪ Monitoring and management of alerts in real time.
MySQL	<ul style="list-style-type: none"> ▪ MySQL (Community edition) Standalone. ▪ MySQL Master-Slave for high availability with manual or automatic recovery. ▪ MySQL Active-Passive cluster with shared storage. ▪ Logical or physical backup with native tools. ▪ Monitoring and management of alerts in real time.
Microsoft SQL Server	<ul style="list-style-type: none"> ▪ MS SQL Server standalone ▪ MS SQL Server Master-Slave with AlwaysOn ▪ MS SQL Server on a Windows cluster with shared storage ▪ MS SQL Server with mirroring or log-shipping ▪ MS SQL Server backup with native tools ▪ Monitoring and management of alerts in real time.
Oracle	<ul style="list-style-type: none"> ▪ Oracle Standalone database ▪ Oracle RAC a node with shared storage ▪ Oracle Dataguard (Primary-Standby) ▪ Oracle RAC (active-active) with shared storage ▪ Monitoring and management of alerts in real time.
MongoDB	<ul style="list-style-type: none"> ▪ MongoDB Standalone database configuration ▪ MongoDB replication (Master-Slave) for high availability ▪ MongoDB multi-node with replication ▪ MongoDB backup with native tools ▪ Monitoring and management of alerts in real time.

4 Price conditions

4.1 Price

The Service's pricing consists of:

- A fee for access to the «Managed DB» service integrating all the tasks mentioned in the implementation RACI
- A monthly recurring amount covering activities related to the maintenance in operational condition of the "Managed DB" service.
- The price of the licenses if they are subscribed by the Service Provider.

Service rates do not include:

- The price of the infrastructure that you must otherwise subscribe with the IaaS provider according to the rates in force.
- The change requests.

4.2 Licenses

Depending on the choice of the vendor of the chosen solution (see table above) and its rules, we propose the following 2 options if possible:

- BYOL (bring your own license) which allows you to come with your licenses under the condition that they are compatible with the subscribed service. The provider is obliged to share the license inventory with the vendor.
- The provider provides the required licenses for the service subscribed under the contract it has with the vendor.

5 Access to the Service

5.1 Prerequisites

The DB Managed Service relies on an IaaS service, which you must also subscribe to according to our recommendations and also subscribe to the OS Managed Service. Versions of the OS and database software must be supported by the vendors.

Note that the IaaS service corresponding to the DB will be billed as soon as it is put into service, without waiting for the receipt of the managed DB service.

For a Managed DB service, certain IaaS functionalities will not be accessible to you:

- ⇒ Management of changes, incidents, configurations of network security rules, evolutions of cloud components
- ⇒ The IaaS console and reporting in the Cloud Store are read-only.

5.2 Commissioning

The Service Provider relies on an SRF (Service Request Form) document that it provides to the Client. The Client fills in this document for commissioning.

This document aims to present the standard settings that we apply and to collect your needs (variable elements) in order to finalize the architecture to be deployed.

This document collects information on two parts:

1. Physical architecture of the DB
 - The minimum number of VMs
 - The location of the VMs
 - Sizing in vCPU, vRAM, disk of each VM
 - VM Addressing Plan
2. The logical elements of the service configuration.
 - The name of each VM
 - The functional level of the forest and the domain
 - The OS required on the database
 - Name of the database
 - The schema of the database

The table below presents the associated tasks and responsibilities for the implementation of the services described in §3.1 and 3.2.

Tasks		The Service Provider	Client
Initial Implementation			
1	Install technical components required for the database server	R, A	I
2	Install the database server	R, A	I
3	Apply the latest database server patches	R, A	I
4	Install and configure the database	R, A	I
5	Set up storage	R, A	I
6	Create partitions	R, A	I

Tasks		The Service Provider	Client
7	Configure tablespace, redolog, tempfile, archivelog and flashback	R, A	I
8	Configure network access	R, A	C
9	Set up user access	R, A	C
10	Activate and validate the subscribed license	R, A	C
11	Implement safety recommendations	R, A	I
12	Validate access to the database	R, A	C
13	Create, deploy and test database stop/restart scripts	R, A	I
14	Configure replication (if option subscribed)	R, A	C
15	Set up and test listeners (listening port)	R, A	C
16	Install and configure agents (DNS, NTP, Antivirus, Backup, Supervision)	R, A	C
17	Install and configure schedulers	R, A	C
18	Configure replication if option is subscribed	R, A	C
19	Configure and test the supervision	R, A	I
20	Configure standard backup and retention policy	R, A	I
Application Implementation			
21	Configure a database instance	R, A	C
22	Perform data import, create schemas and database objects	R, A	C
23	Configure application prerequisites on the database	R, A	C
24	Test database failover (if replication option is subscribed)	R, A	C
25	Perform the backup/restore tests	R, A	C
Upgrade release			
26	Measure database response times before upgrade	R, A	I
27	Upgrade the database server	R, A	I
28	Measure database response times after upgrade	R, A	I
Decommissioning			
29	Decommission the database	R, A	I
30	Decommission filesystems from the database	R, A	I
A: Responsible – A: Accountable – C: Consulted – I: Informed – V: Validator			

5.3 Maintenance in operational conditions

We ensure the operations for the maintenance in operational conditions of the database in addition to the OS required to render the service.

Measures taken in the context of this objective may be preventive or curative.

The table below presents the tasks and responsibilities associated with operating the services described in §3.1 and 3.2.

Tasks		The Service Provider	Client
1	Manage database memory and processes.	R, A	
2	Manage database architecture (distributed, partitioned, replicated, and client-server,	R, A	
3	Manage high availability feature if subscribed	R, A	
4	Manage the disaster recovery functionality of a database if the option is subscribed.	R, A	
5	Oversee database performance indicators.	R, A	I
6	Manage the database logs	R, A	
7	Ensure the integrity of databases	R, A	
8	Manage and adapt the settings	R, A	C
9	Analyze the database logs	R, A	I

Tasks		The Service Provider	Client
10	Apply patches	R, A	C
11	Perform Memory Allocations	R, A	
12	Perform a replication reconstruction in case of loss of sync (if the option subscribed)	R, A	C
13	Repeat a master database from the secondary database in case of problems (if the option subscribed)	R, A	C
14	Perform priority / process / parallelism management configuration on the server	R, A	C
15	Perform Database Diagnostic (if there is a problem)	R, A	I
16	Optimize I/O disks, CPU, and RAM memory	R, A	C
17	Optimize an instance (ex: SGA)	R, A	I
18	Handle database server related incidents	R, A	I
19	Handle backup incidents	R, A	I
20	Handle replication incidents (if option subscribed)	R, A	I
21	Handle incidents related to data or database saturation	R, A	I
22	Handle incidents related to File System data/non data saturation	R, A	I
23	Handle incidents related to Process down incidents	R, A	I
24	Handle incidents related to invalid objects	R, A	I
25	Handle database connection incidents	R, A	I
26	Handle Gap related incidents on replication	R, A	I
27	Handle incidents related to critical errors on the log file	R, A	I
28	Handle incidents related to system performance issues	R, A	I
29	Escalate incident to Database editor	R, A	I
30	Apply the resolution solution proposed by the DB vendor	R, A	I
31	Ensure the relationship with vendors and database license management	R, A	I
32	Produce the capacity planning report	R, A	I
33	Validate Filesystem and Volume Group increase	R, A	C
34	Stop or restart supervision	R, A	I
A: Responsible – A: Accountable – C: Consulted – I: Informed – V: Validator			

5.3.1 Supervision

In addition to the supervision offered as part of the "Managed OS" service subscribed as prerequisites, the Service Provider provides the following supervision for your Managed DB:

- The Service Provider monitors key services such as application processes, network access to databases and performance.
- The Service Provider monitors key metrics and can trigger alerts in case of critical problems, such as replication errors or slow response times.
- The Service Provider processes the alerts sent not the supervision.

5.3.2 Backup

To ensure service availability in case of problems, the Service Provider makes a backup of the Managed database via the data dump functionality to allow easier recovery. The retention of the backup will be for a period of 6 days. This backup is completed by a daily backup made with the IaaS native solution chosen with a retention of 6 days. The backup is done during the following time window: 22:00 to 06:00.

The Service Provider supervises the backup solution to ensure proper execution. If necessary, the Service Provider, in consultation with the Client, shall restore a backup copy.

5.3.3 Administration

Based on the monitoring tools, the Service Provider follows the performance metrics and the proper functioning of the database. These metrics allow us to:

- Track the behavior of the service in real-time
- Proactively initiate troubleshooting following the detection of a supervision alert
- Track trends over longer time scales

It is up to the Client to report any evolution of its architecture, the solicitation of its database in order to adjust the VM template.

6 Support

The Service Provider provides the following services for the support of the Managed Database.

6.1 Patch management

The installation of patches provided by the vendors is done once a quarter in working hours on a chosen time slot with the customer.

The application of patches is necessary to ensure the proper functioning and security of the service. The client is therefore obliged to respect the vendors' roadmap in order to guarantee access to the support. The postponement may be postponed exceptionally once a year. Failing this, the Service Provider is no longer liable for its service commitments.

6.2 Release management

The Service Provider applies the update of releases according to the recommendation of the vendor and the operational team. If the customer does not comply with this requirement, our SLA commitments will no longer be insured.

The release update is not available in the change catalog and will be managed in project mode.

6.3 Change Management

Change management for the DB Managed service is part of the common model of our managed services.

6.3.1 Catalogue requests

Requests for change are presented in Chapter 7.

The Service Provider prepares the implementation of a change in consultation with the Client. Once the request is processed, the Client is notified to validate and close the request.

6.3.2 Out of catalogue requests

For an out-of-catalogue request, the operational team assesses its feasibility, 2 scenarios arise:

1- Easily qualified application

The operational team makes a return to the Client on the number of Tokens necessary for the realization and if applicable the necessary infrastructure resources and the resulting recurring service load. After the Customer's agreement, the request will be made and the following items will be invoiced:

- the number of Tokens debited from the Customer's package if he has subscribed one or not,
- additional infrastructure resources according to the cloud infrastructure contract subscribed,
- the recurring service charge

2- Request with specific qualification

The operational team will give you feedback to get closer to your sales contact.

7 Change Catalogue

Task No.	Job Name	# of tokens
	Run a database SQL job	1
	Configure encryption of database backups	4
	Create Standard Database Management System (DBMS)	8
	Upgrade the standard Database Management System (DBMS)	32
	Create a standalone database instance with backup, monitoring, reporting and archiving.	8
	Perform Base Magnification	2
	Change 1 parameter of the database	1
	Data export / import	2
	Temporarily suspend/ Reactivate in place of the backup	2
	Restore database (full or partial)	8
	Uninstall Database Management System (DBMS)	8
	Delete a standalone database	4
	User account: Create/Edit/Delete	2
	Resync backup database (out of incident) (if replication option subscribed)	8
	Start or stop a listener	1
	Create/Edit/Delete a job	2
	Start/Restart/Stop a database service	1
	Request information (log, status)	2
	Suspend/Reactivate/Reschedule a job	2
	Start/Stop a job	2
	Database encryption	50
	Uninstall Replicated Database Management System (DBMS)	32
	Upgrade the engine of a high availability database.	64