



Cloud Services from O₂

Platform as a Service

Product handbook

Contents

Click below:



1

Product overview

1.1. Introduction

IaaS is our 'Infrastructure as a Service' Virtual Private Cloud Service. This service targets Enterprise customers who wish to virtualise their server environment. IaaS gives you a virtualised Resource Pool in order to build your own IT platforms.

Platform as a Service (PaaS) provides additional end-to-end service management for our IaaS service with Windows OS management, anti-virus, Windows SQL and MySQL monitoring.

Moving from an in-house managed server environment to PaaS improves the business efficiency of your IT operations and lowers the total cost of ownership. PaaS provides server management, monitoring, analysis and installation of service packs and hotfixes in line with vendor recommendations.

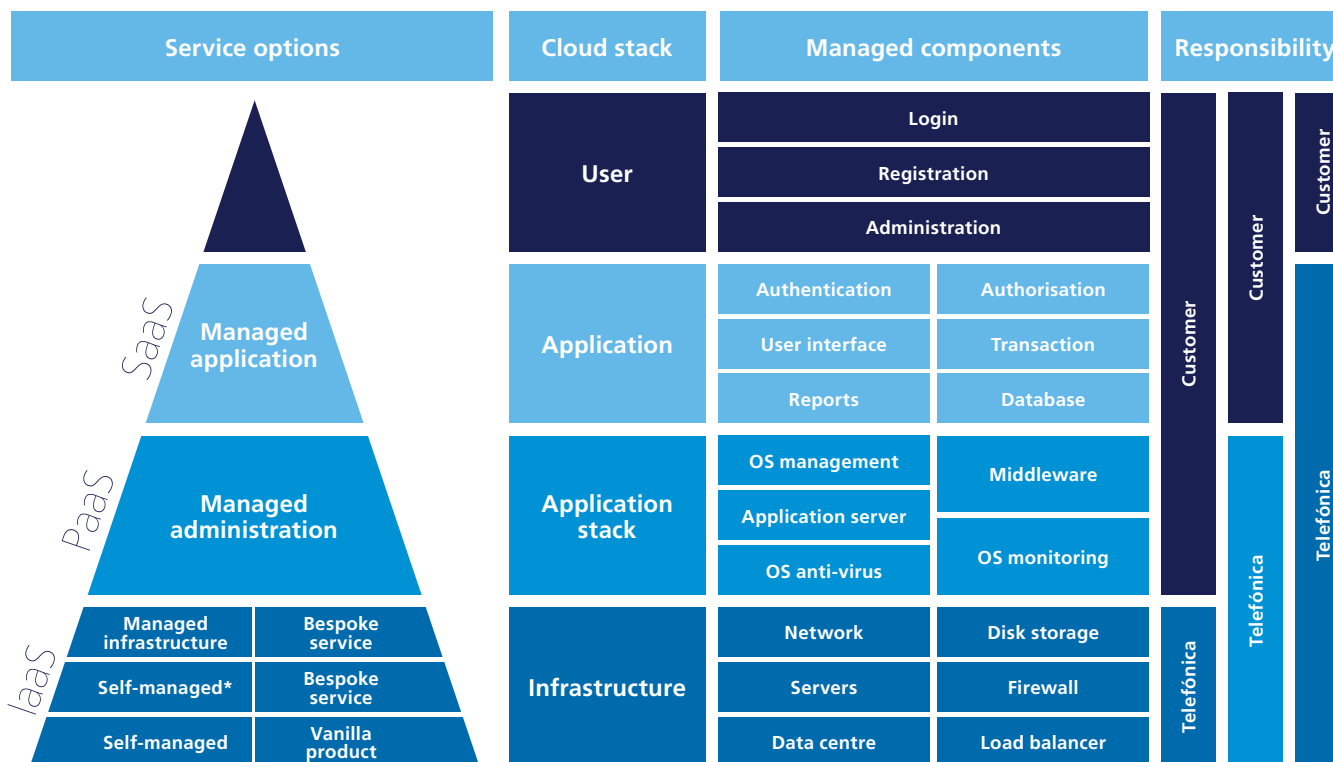
For IaaS capabilities please refer to the separate IaaS product handbook.

2

Service model

PaaS is based around the portfolio of OS Windows, Microsoft SQL and MySQL server management. These services consist of the following:

- OS Windows server: management, monitoring, analysis, installation of service packs and hotfixes and patching agent
- Initial policy management deployment
- Anti-virus (AV), installation of AV agent, licence management
- SQL and MySQL database engine monitoring and management
- VMware Virtual Machine monitoring
- Storage and backup
- Virtualised firewall, load-balancers and network connectivity



3

Windows server management

The following Windows servers are supported under PaaS. O₂ support for all Windows server environments will follow the Microsoft Support Lifecycle policy.

OS Windows server	Release	Mainstream support date	Extended support end date
Windows server 2008	2008	13 January 2015	14 January 2020
Windows server 2008 R2	2009	13 January 2015	14 January 2020
Windows server 2012	2012	9 January 2018	10 January 2023
Windows server 2012 R2	2013	9 January 2018	10 January 2023

OS Windows server	Release	Edition
Windows 2008	R1	Standard 32-bit
Windows 2008	R1	Standard 64-bit
Windows 2008	R1	Enterprise 32-bit
Windows 2008	R1	Enterprise 64-bit
Windows 2008	R2	Standard 64-bit
Windows 2008	R2	Enterprise 64-bit
Windows 2012	R1	Standard 64-bit
Windows 2012	R1	Datacentre 64-bit
Windows 2012	R2	Standard 64-bit
Windows 2012	R2	Datacentre 64-bit

3

Windows server management

3.1. Windows server monitored parameters

O₂ will monitor the following server parameters:

Parameter	Monitor
vCPU	Overall CPU usage % threshold breached Individual CPU usage % threshold breached Average processor queue length threshold breached
System	Reboot detected
Memory	Total physical memory usage % threshold breached
Disk	Specific file system availability Disk-free space threshold breached
Network connectivity	Monitor specific server network interface/IP addresses availability (from monitoring platform) Monitor specific server network interface/IP addresses/port availability (from monitoring platform dependent on server function)
Services	Services which should be monitored by default (expected running or stopped) AV agent processes System monitoring agent processes Virtualisation integration agent Other management agent processes
Processes	Individual process memory usage threshold breached Individual process CPU usage threshold breached Incorrect number of processes dependent on server function
Event log	All errors logged

3

Windows server management

3.2. Windows OS third level support

O₂ will provide third level support when the Windows OS server is licenced under an O₂ SPLA.

When you purchase the Windows OS server licences direct, the Microsoft EA licence agreement will be between you and Microsoft, and it will be your responsibility to escalate to Microsoft support as appropriate.

3.3. Windows OS patch management

O₂ patch management is key to the continued availability and security of the Windows OS server environment.

Windows OS server security and critical updates are applied on a monthly or quarterly basis within an agreed maintenance window. Non-critical updates and optional patches will be agreed on an as-needed basis.

Any security vulnerability updates that need applying outside of the standard maintenance window will be performed through an agreed emergency change control procedure.

3.4. Anti-virus management

O₂ will push daily anti-virus updates to an agreed list of servers. O₂ will apply anti-virus updates to the Windows OS server at regular intervals in line with vendor recommendations.

Where O₂ recommends an update to the anti-virus software version, excluding major releases, these will be performed within the agreed weekly maintenance window.

Any security vulnerability updates that need applying outside of the standard maintenance window will be performed through an agreed emergency change control procedure.

4

Microsoft SQL management

The following Microsoft SQL servers are supported under PaaS. O₂ support for all SQL environments will follow the Microsoft Support Lifecycle policy, for both the SQL release and any associated operating systems. This service excludes Database Administration (DBA) activities and is primarily focused on monitoring the health of SQL. All DBA activities are your responsibility.

OS Windows server	Release	Mainstream support date	Extended support end date
SQL server 2008 R2	2010	7 July 2014	9 July 2019
SQL server 2012	2012	11 July 2017	12 July 2022
SQL server 2014	2014	9 July 2019	9 July 2024

4.1. Microsoft SQL monitored parameters (table one)

O₂ will monitor the following parameters of the SQL database engine:

Parameter	Monitor	
Network connectivity	Monitor SQL server-specific network interface IP addresses/port availability (from monitoring platform dependent on server function)	
Services	Services which should be monitored by default (expected running or stopped) SQL instance-specific services – server, agent, browser, reporting services	
Event log	SQL specific event – warnings/specific SQL event log sources not trapped in server generic error logging	
SQL	Time since last successful backup Database connectivity (e.g. Login from monitoring) Database size (% versus storage for example) Transaction log growth/log file size/ % free space SQL replication monitoring SQL server Windows service	SQL server reporting services – Windows service SQL server analysis services – Windows service SQL server integration services – Windows service SQL server full text search service SQL server agent Windows service SQL user connections performance Blocking sessions

4

Microsoft SQL management

4.2. Microsoft SQL monitored parameters (table two)

O₂ will monitor the following parameters of the SQL database engine:

Parameter	Monitor		
SQL	Service principal name configuration status	Auto update statistics async configuration	DB log file space
	SQL server Windows service	DB chaining configuration	Source log shipping
	Database status	Recovery model configuration	Destination log shipping
	Database backup status	Page verify configuration	Long running jobs
	Auto close configuration	DB total space	Job duration
	Auto create statistics configuration	DB space percentage change	Last run status
	Auto shrink configuration	DB file space	Database health policy
	Auto update statistics configuration		Transaction per seconds/minutes

5

MySQL management

The following MySQL servers are supported under PaaS. O₂ support for all MySQL environments will follow the Oracle Support Lifecycle policy for both the SQL release and any associated operating systems. This service excludes Database Administration (DBA) activities and is primarily focused on monitoring the health of MySQL. All DBA activities are your responsibility.

MySQL server	Release	Mainstream support date	Extended support end date
MySQL database 5.5	Dec 2010	Dec 2015	Dec 2018
MySQL database 5.6	Feb 2013	Feb 2018	Feb 2021

5.1. MySQL support Windows OS

O₂ support MySQL deployments on the following Windows OS servers:

MySQL server	Windows 2008	Windows 2012
MySQL database 5.5	●	●
MySQL database 5.6	●	●

5

MySQL management

5.2. MySQL monitored parameters

O₂ will monitor the following parameters of the MySQL database engine:

Parameter	Monitor	
Network connectivity	Monitor MySQL server-specific network interface IP addresses/port availability (from monitoring platform dependent on server function)	
Services	Services which should be monitored by default (expected running or stopped) MySQL instance-specific-services – server, agent, browser, reporting services	
Event log	MySQL specific event – warnings/specific MySQL event log sources not trapped in server generic error logging	
SQL	Time since last successful backup Database connectivity (Login from monitoring platform for example)	Database size (% versus storage for example) Transaction log growth/log file size/% free space MySQL replication monitoring

6

Database monitored attributes

The following attributes will be monitored for both MySQL and Microsoft SQL:

Parameter	Monitor		
Database monitored parameter	alertLog	archUsedPercentz	pctUsed
	alertLogStatus	blockCorruptErrors	problemTbsp
	archFull	blockCorruptErrStack	Response
	archiveHungErrors	dumpFull	Status (up/down)
	archiveHungErrStack	dumpUsedPercent	

7

Virtual Machine (VM) management

7.1. VM monitored parameters

O₂ will monitor the following parameters for activity and against thresholds for the VM either via the ESXi Host or vCentre machines:

Parameter	Monitor
vCPU	CPU usage
Memory	Memory state and usage
Disk I/O	Disk read/write volumes, disk latency
Network I/O	Network packets sent and received
Events	Event and alarm messages
Data store capacity	Virtual disk capacity
Data store free space	Free disk space

8

Guest file backup policy

O₂ offers five options of guest file backup and will create the backup schedule defined to individual or grouped Windows, Microsoft SQL and MySQL servers:

- Backup is the OS server, application, guest files and folders
- Restore will be done by a customer self-serve portal



Backup

Gold	Daily 28d	Weekly 12w	Monthly 12m	Silver	Daily 14d	Weekly 8w	Monthly 6m
<ul style="list-style-type: none"> • A daily incremental backup, a single generation of incremental backups is maintained. [Retention of daily copies: 30 days] • A weekly full backup. [Retention of copies: 12 weeks] • A total monthly backup which corresponds to the total weekly quarter. [Retention of copies: 12 months] • A total annual backup (which corresponds to the total of the last month of year). [Retention of copies: 5 years] 				<ul style="list-style-type: none"> • A daily differential incremental backup, a single generation of incremental backups is maintained. [Retention of daily copies: 14 days] • A full weekly backup. [Retention of copies: 8 weeks] • A total monthly backup, which corresponds to the total weekly quarter. [Retention of copies: 8 months] • A total annual backup, which corresponds to the total last month of year. [Retention of copies: 1 year] 			
Bronze	Daily 7d	Weekly 4w	Monthly 3m	Iron	Daily 7d	Weekly 4w	
<ul style="list-style-type: none"> • A daily differential incremental backup daily, a single generation of incremental backups is maintained. [Retention of daily copies: 7 days] • A full weekly backup. [Retention of daily copies: 4 weeks] • A total monthly backup, which corresponds to the total weekly quarter. [Retention of daily copies: 16 weeks] 				<ul style="list-style-type: none"> • A differential incremental daily backup; a single generation of incremental backups is maintained. [Retention of daily copies: 7 days] • A full weekly backup. [Retention of daily copies: 4 weeks] 			
Copper	Daily 7d	Weekly 1w					
<ul style="list-style-type: none"> • A daily differential incremental backup daily, a single generation of incremental backups is maintained. [Retention of daily copies: 7 days] • A full weekly backup. [Retention of daily copies: 1 week] 							

9

Customer data backup and recovery

The IaaS service includes the backup up of VMs on a daily basis via snap-shots to ensure the availability of the service, these snap-shots are kept for a minimum of 28 days.

For customer backup and restoration, two optional services are provided, each with a self-serve portal.

9.1. File level recovery

This allows you to recover guest OS folders and files from image-level backups, without having to first extract them from virtual disks. Files can be recovered from Linux and Windows VMs as well as from any of the supported guest file systems.

9.2. Application item recovery

Within the O₂ portal you can instantly browse and recover individual items within the following Microsoft applications:

- Managed administration of Microsoft applications is excluded from the PaaS
- Explorer instant recovery is an optional licence feature of backup

Application	Features
Exchange 2010 Exchange 2013	Browse, search and restore mailboxes and mail box contents Export email or restore to Exchange and O365
SharePoint 2010 SharePoint 2013	Browse, search and restore SharePoint objects Export, email or restore directly back to SharePoint
Active Directory 2003 upwards	Browse, search and restore any Active Directory objects, to the same or different location Compare the backup state with the current Active Directory partition to quickly find changes
Microsoft SQL 2008, 2012 and 2014	Browse and restore SQL databases to a specific point in time via transaction log replay

9.3. Backup files

After the first full backup, all subsequent backups are incremental – only the changes from the last backup run.

- The backup 'injects' the changes into the full recovery file (.VBK)
- Replaced data is saved as a reversed incremental changes file (.VRB)

The .VBK file is always a full recovery file. It is the largest file in the directory and holds the latest backup.

The .VRB files do not change, as they contain the .VBK data blocks which were replaced by incremental data for that particular incremental backup run.

To restore or roll back to a particular date/time, all related .VRB files are applied to the .VBK file in the required order to get you back to the point-in-time.

The retention policy specifies how many of the .VRB files are stored, this then corresponds to how far it can roll back. If the retention policy is set to 30 days, then the 31st time the backup job runs it will delete the oldest .VRB file.

9.4. Archived backup files

The .VBK and associated .VRB files can be archived to tailored storage solutions including tape backup. If you would like tailored archiving of backup files, please advise your solution architect during the design.

10

PaaS roles

10.1. Windows OS server roles

The table below describes the Windows OS roles and responsibilities between O₂ and the customer:

Windows OS Server	O ₂	Customer
Logging and progression of faults with Microsoft (SPLA)	●	
Logging and progression of faults with Microsoft (EA)		●
Management of users, groups, directories, permissions and access control		●
Protection from unauthorised access within the constraints of the overall solution and in-line with industry best practice	●	
System state backups	●	
System files backup		●
Initial tuning and analysis of operating system	●	
24x365 monitoring of standard operating system services and components	●	
Incident and problem management	●	
Installation of service packs, security updates, hotfixes and patches	●	
Initial OS deployment in alignment with O ₂ platform standards	●	
Perform monthly review of systems using the OS best practice analyser (where appropriate)	●	

10

PaaS roles

10.2. Patch management roles

The table below describes the patch management roles and responsibilities between O₂ and the customer:

Patch management	O ₂	Customer
Testing of updates before application to live systems		●
Installation of security updates to the operating system	●	
Installation of hotfixes and patches to the operating system	●	
Installation of service packs to the operating system	●	
Installation of patches, service packs, hotfixes and software upgrades for contracted applications	●	
24x365 monitoring of patching agent	●	

10.3. Anti-virus roles

The table below describes the anti-virus roles and responsibilities between O₂ and the customer:

Anti-virus	O ₂	Customer
Installation of anti-virus agent	●	
Installation of security fixes to anti-virus agent	●	
Installation of patches to anti-virus agent	●	
Installation of service packs anti-virus agent	●	
Provision of automated anti-virus update service to each licenced server	●	
Anti-virus licence management	●	
Configuration of anti-virus agent in accordance with the best practice determined by installed application software	●	
Logging and progression of faults with anti-virus vendor	●	
Incident and problem management	●	
24x365 monitoring of anti-virus agent and response management	●	

10

PaaS roles

10.4. SQL database roles

The table below describes the Microsoft SQL and MySQL roles and responsibilities between O₂ and the customer:

Microsoft SQL and MySQL	O ₂	Customer
Install Microsoft SQL to agreed default standards	●	
Installation of security updates		●
Installation of application hotfixes and patches		●
Installation of service packs		●
Implementation and management of maintenance plans		●
Management of database network layer		●
Perform database backups		●
Perform database restores		●
Access control and security of databases files		●
Configuration, management and control of roles and privileges for database users		●
Perform monthly review of systems using the SQL best practice analyser	●	
Moving databases		●
Moving data between databases		●
Import and exporting data to databases		●
SQL server indexing		●
SQL server jobs		●
SQL server profiler		●
SQL server transaction log to recover failed database		●
Monitor SQL database up/down error logs		●
Database administration		●
Database troubleshooting		●

10

PaaS roles

10.5. In life management (table one)

The table below describes the in life management roles and responsibilities between O₂ and the customer:

Storage and backup hardware	O ₂	Customer
Add server to monitoring	●	
Backup VM	●	
Configure file backup		●
Configure installed Microsoft SQL for application use		●
Configure system or applications with restored files		●
Configure VM OS to predefined standards and function	●	
Control AV updates	●	
Control OS updates	●	
Create default user accounts for client on server	●	
Delete VM	●	
Document server usage and non-standard configuration		●
Install AV client	●	
Install further OS services		●
Install Microsoft SQL to agreed default standards	●	
Install monitoring agent	●	
Install required VM OS	●	
Install server roles/functions		●
Install third party applications		●
Integrate server to client directory service (AD/other)		●
Monitor AV compliance and alerts	●	
Monitor OS (to agreed metrics)	●	

10

PaaS roles

10.6. In life management (table two)

The table below describes the in life management roles and responsibilities between O₂ and the customer:

In life management table two	O ₂	Customer
Perform Windows health checks on server at customer request. As defined under Windows monitored parameters vCPU, system, memory, disk, network connectivity, services, processes, event log	●	
Perform Microsoft SQL health checks on server at customer request. As defined under Microsoft SQL monitored parameters Network connectivity, services, event log, SQL	●	
Perform MySQL health checks on server at customer request. As defined under MySQL monitored parameters network connectivity, services, event log, MySQL	●	
Provide details of exceptions to default monitoring		●
Provide initial configuration information to client	●	
Provision VM	●	
Reconfigure virtualised hardware	●	
Remove server from client directory service (AD/other)		●
Remove server from monitoring	●	
Request server added to monitoring		●
Request server removed from monitoring		●
Restore files		●
Restore VM	●	
Test server monitoring	●	
Pre-empt VM or OS issues/notify client	●	
Importing customer data into the PaaS environment		●
Exporting customer data into the PaaS environment		●

O₂ will perform daily health checks on Windows, Microsoft SQL and MySQL servers and customers can request additional health checks linked to an incident ticket.

10

PaaS roles

10.7. Definition terms

The table below describes the abbreviations and terms within the product handbook:

Term/expression	Meaning
CPU	Central Processing Unit
EA	Microsoft Enterprise Agreement
AV	Anti-virus
DBA	Database Administrator
ESXi Host	The VMware host that supports the individual VMware guest instances (Virtual Machines)
I/O	Input/output
IaaS	Infrastructure as a Service
MySQL	Open Source Database
OS	Operating System
PaaS	Platform as a Service
SPLA	Microsoft Services Provider Licence Agreement is for service providers who licence Microsoft software products. It provides software services and hosted applications to end customers
SQL	Structured Query Language
.VBK	Veeam Backup Virtual Machine Backup File
vCentre	A centralised management tool from the VMware suite that allows for the management of multiple ESXi Hosts and Virtual Machines (VMs) from different ESXi servers through a single console application
vCPU	virtual Central Processing Unit of the virtual machine(s)
VM	Virtual Machine, sometimes referred to as a Virtual Server, an Instance or a Virtual Instance
.VRB	Veeam Incremental Backup File

Confidentiality statement

All information contained in this proposal is provided in confidence for the sole purpose of discussions between the person to whom it is provided and Telefónica UK Limited, and shall not be published or disclosed wholly or in part to any other party without Telefónica UK Limited's prior written permission, and shall be held in safe custody. These obligations shall not apply to information that is in the public domain, or lawfully received from a third party.

In addition, all information contained in this proposal is subject to contract and, unless expressly stated to the contrary, to Telefónica UK Limited's standard terms and conditions.

o2.co.uk/enterprise