Deployment and functions

Your phone contract has a price per month, but the real bill depends on what you did: the extra gigabytes, the calls abroad, the month you forgot to switch off roaming. Cloud bills work the same way. Before a company moves a system to the cloud, somebody has to answer three questions: whose infrastructure will it be, what will it do there, and how much will it cost each month?

In the last lesson you learnt **what** you can rent. Today you learn **from whom** and **for what**, and you do what a real IT team does before signing anything: you build a cost estimate with a provider's own **pricing calculator**, and you learn to read every line of it.

What you will learn

- Tell the four **deployment models** apart: **public**, **private**, **hybrid** and **multicloud**
- Name the main **functions of the cloud**: processing data, exchanging information and running applications
- Read a **pricing calculator**: region, instance, hours, GB, data transfer, taxes
- Build and compare a dated monthly estimate for a real system of your project company
- Avoid two traps: "private means in our building", and "cloud functions" meaning only the product called *Cloud Functions*

Who owns the cloud: deployment models

> A **deployment model** says whose infrastructure the cloud runs on and who can use it.

Model	What it is	When it makes sense
Public cloud	The infrastructure belongs to a provider that offers it to any customer; many customers share the same hardware.	Small and medium companies, new projects, changing demand. No initial investment.
Private cloud	Cloud infrastructure for the exclusive use of one organisation. It can be in its own building or hosted by a third party.	Very sensitive data, strict legal requirements, or a need for full control.
Hybrid cloud	A combination of private (or on-premise) infrastructure and public cloud, connected and working together.	Old systems that cannot move, plus peaks of demand covered by the public cloud.
Multicloud	Using services from two or more cloud providers at the same time.	Not depending on one provider, using the best of each, or higher availability.

In the city-builder game: the **public** cloud is the city's utility, shared by every neighbourhood; a **private** cloud is a power station only for your industrial estate; **hybrid** is your own small plant plus the utility for the peaks; **multicloud** is buying from two utilities so a strike at one does not leave you in the dark.

Take the hotel in Calvià again. Its booking website, with summer peaks, runs in a public cloud. The customer records and the old management program stay on its own servers. Both are connected: **hybrid**. If it also keeps its backups with a second provider, it is **multicloud** as well.

> **Careful: three common mix-ups**
> **Private does not mean "in our building"**: what defines it is exclusive use, not location. **Hybrid and multicloud are not the same**: hybrid mixes private and public; multicloud mixes providers, and a company can be both. **Public does not mean "open to everyone"**: each customer's data are kept apart; what is shared is the hardware. NIST also defines a fourth model, the **community cloud**, shared by organisations with a common interest, such as several public administrations.

What the cloud is for: its functions

> The **functions of the cloud** are the jobs a company uses it for. The three main ones are processing data, exchanging information and running applications.

Function	What the cloud does	Examples
Data processing	Provides computing power to transform, analyse or train on large volumes of data.	Analysing five years of bookings to predict occupancy; processing the readings of thousands of sensors
Information exchange	Acts as the common point where people, applications and devices pass data to each other.	Shared documents, file sync, **APIs** (agreed ways for two programs to talk) between companies, IoT devices sending readings
Running applications	Hosts and runs programs so users reach them over the network.	A booking website, the server of a mobile app, an online ERP, your GitHub Pages site
Others	Storage and backups, managed databases, development and test environments.	Phone photos that copy themselves; code repositories

One tool usually does several at once. Google Docs runs an application, stores your file and lets three classmates edit it together.

> **Careful: "cloud functions" has two meanings**
> In this module, the *functions of the cloud* are **what it is used for** (the table above). Some providers also sell a product with a similar name, such as *Google Cloud Functions* or *AWS Lambda*: small pieces of code that run when something happens and are billed per execution. That is one specific service (often called **FaaS**, *Function as a Service*), not the criterion.

How much does it cost: reading a pricing calculator

> A **pricing calculator** is a provider's free web tool where you describe what you would rent and it estimates what you would pay.

The big providers publish one, and none needs an account to make an estimate: the AWS Pricing Calculator, the Azure Pricing Calculator and the Google Cloud Pricing Calculator.

Smaller providers such as Hetzner Cloud simply publish a price list per plan. Every estimate is built from the same fields:

Field	What it means	Typical trap
Region	Where the data centre physically is. Prices change from region to region, and so does the law (lesson 4).	Leaving the default region, often in the United States
Instance type	The size of the virtual machine: how many virtual processors (**vCPU**) and how much memory.	Choosing a huge machine "just in case"
Hours of use	A month has about **730 hours**. Always on = 730. Office hours only = far fewer.	730 hours for a system that only works by day
Storage (GB-month)	The GB of disk or storage you rent, paid per month.	Forgetting the disk of the machine
Data transfer	What goes out to the internet is usually paid per GB; what comes in, often not.	Ignoring it for a website with many visitors
Payment option	On demand (no commitment) or with a one- or three-year commitment (cheaper).	Comparing a committed price with an on-demand one
Taxes	The AWS calculator does not include taxes; in Spain you add VAT (IVA).	Presenting the total as the final price

Prices change, so **an estimate is only valid with its date**. As an example of reading, on 25/10/2026 Hetzner's page listed its smallest shared cloud servers from €5.99 and €6.49 a month, without VAT. Do not memorise that figure: open the page on the day you need it and write down the date.

> **Careful: an estimate is not a price**
> The calculator multiplies what **you** typed by the provider's current prices. If your hypothesis is wrong (twice the visitors, a machine left on all night), the bill will be different. And it never includes the people: somebody still has to configure, watch and update the system.

In class: how much does our system cost?

Individually or in pairs, in the browser. **No generative AI**: this activity is assessed (class work, 30%).

Step	Do this	You should get
1	Choose one system of your project company that makes sense in the cloud (website, bookings, online shop, backups, sensor data…). Write which **function of the cloud** it fulfils	One system and one function
2	Decide what it needs, as a reasoned hypothesis: how many machines and of what size, how many hours a month, how many GB	A short list of needs, labelled hypothesis
3	**Estimate 1:** build it in the AWS Pricing Calculator (**Create estimate** → search the service → **Configure**) in the region *Europe (Spain)*. Note the monthly total and **today's date**	One dated figure
4	**Estimate 2:** the same in another region (for example *Europe (Frankfurt)* or *US East (N. Virginia)*) **or** with another provider (Azure, Google Cloud or Hetzner's price list)	A second dated figure
5	**Evidence:** export the estimate as PDF (or take a screenshot where the configuration and the total are visible) and copy the **Share** link	A file and a link

Step	Do this	You should get
6	**Conclusion** in three sentences: which you would choose and why; what the estimate does **not** include; which deployment model you would propose for this system	Your reasoning

Hand in on Classroom the document with the six answers, the PDF or screenshot and the link.

For your project

This lesson feeds Deliverable 3 · Cloud architecture:

Today's work	Becomes	Criterion
System, function and the two dated estimates with evidence	Section B: cloud functions and real cost estimate	b, e
The deployment model you proposed	Section D: deployment model and sovereignty	e

Key takeaways

- **Deployment models**: **public** (a provider's, shared), **private** (exclusive to one organisation, wherever it is), **hybrid** (private plus public, connected) and **multicloud** (several providers).
- The main **functions of the cloud** are **processing data**, **exchanging information** and **running applications**, plus storage, backups and more.
- A **pricing calculator** turns your hypothesis (region, instance, hours, GB, transfer) into a monthly estimate. About **730 hours** is a whole month.
- An estimate is only valid **with its date**, does not include **VAT** in the AWS calculator, and never includes the people's work.
- Changing the **region** changes the price and, as you will see, the law.

Quick check

1 A hotel keeps its customer records on its own servers and its booking website with a public provider, and both are connected. Which deployment model is it?

A Public
B Private
C Hybrid
D Community

2 Which statement about a private cloud is true?

A It must always be inside the company's own building
B It is for the exclusive use of one organisation, wherever it is located
C It is shared by many customers who do not know each other
D It always means using two providers

3 A travel company uses one provider for its website and another for its backups. What is it doing?

A Private cloud
B On-premise
C Multicloud
D SaaS

4 An API connects a hotel's booking system with an online travel agency. Which function of the cloud is that?

- **A** Data processing
- **B** Information exchange
- **C** Running applications
- **D** Backups

5 A virtual machine must be on all month. Roughly how many hours do you enter in the calculator?

- **A** 24
- **B** 160
- **C** 730
- **D** 8,760

6 Your AWS estimate says €40 a month. Pick the two statements that are true.

- **A** VAT has to be added, because the AWS calculator does not include taxes
- **B** The figure is guaranteed for the next three years
- **C** The estimate should carry the date, because prices change
- **D** The figure already includes the salary of whoever manages the system

7 Two estimates for the same machine give different totals in Spain and in the United States. What is the best conclusion?

- **A** One of the two calculators is wrong
- **B** Always pick the cheaper region, nothing else matters
- **C** The region changes the price, and it also changes where the data are and which law applies, so both must be weighed
- **D** Regions only affect speed, never price

The bill tells you how much the power station costs. But what if the answer has to arrive in milliseconds, or the line goes down? Next: Edge, fog and mist.

Solutions

1. C · Private (or on-premise) infrastructure plus public cloud, connected and working together, is **hybrid**.

2. B · What defines a **private cloud** is **exclusive use**. It can be hosted by a third party in another building and still be private.

3. C · Using services from **two or more providers** at the same time is **multicloud**. It may also be hybrid if it keeps private infrastructure, but the two ideas are different.

4. B · The cloud acts as the meeting point where two systems pass data to each other: **information exchange**.

5. C · A month has about **730 hours** (8,760 hours a year divided by 12). 160 would be office hours; 8,760 is a whole year.

6. A, C · The calculator gives an **estimate without taxes**, valid on **the day you made it**, for exactly what you typed. People's work is never in it.

7. C · Prices vary by **region**, and so do latency and the legal framework. A cheaper region abroad may be a worse choice for personal data, as you will see in lesson 4.