Colocation Data Center ABC

Read this guide before you start searching for your data storage solution

We have put together this brief overview of what a colocation data center is, how it works, it's benefits, pricing and what to look for, among many other things.

Given the exponential growth of data in the world, colocation data centers are rapidly becoming northern Europe's new base industry. Conditions are extremely good due to low energy taxes, high fibre connectivity, great power transmission capacity, and access to renewable energy sources.

Content:

What is a Colocation Data Center?

A colocation data center is a facility where organisations, businesses and authorities can rent space for the storage of their servers and other IT equipment. The colocation data center provides the building, connectivity, power and cooling for the servers, as well as the physical security.

How Colocation Works

The colocation provider, i.e. the data center operator, rents out space in the data center. The operator will also provide power and cooling systems, IP addresses and the bandwidth/fibre access that the customer will require in order to successfully install and run their server(s) from the data center. The customer places their server at the data center.

Space in the data center is often rented out in terms of 'racks' and 'cabinets'. A rack is a standardised frame for storing equipment and hardware.

Equipment in a rack is measured in rack units (U). Colocation prices are often calculated from the number of units required. A full size rack is most often 47U and is often called a 'cabinet'. Most colocation providers rent out full, half or partial cabinets depending on customers' needs.

We have written an illustrative blog post on **Colocation** comparing it to car leasing vs car ownership.

Benefits of a Colocation Data Center

To put it short: The benefits of colocation is that it doesn't demand capital investments or the lengthy lead times involved in building one's own data center. Colocation can be bought where and when you need it, as you need it, in safe areas and with power and cooling in a highly accessible and redundant environment. You only pay for required capacity and pay-as-you-grow i.e. much more efficient for most companies, rather than running their own data center with unutilised capacity.

It can be concluded in the Total Cost of Ownership (TCO). We have written an excellent blog post on the **TCO equation** – not to be missed.

Often, a number of add-on services are provided, such as remote hands and different type of surveillance services, just to mention a few.

What more is, colocation providers deliver much more stringent levels of security, including security guards and even biometric access control. Modern data centers work with physical security through layers of defence. Resilience is another key feature, often measured in uptime guarantees. Simply put; the customer can choose the risk of planned and unplanned outages. Whatever uptime guarantee they have, most data centers provide backups and UPS devices to protect against outages, including those caused by natural disaster, fire or flooding.

Colocation vs Managed Hosting

To be honest: This is a sliding scale. There is no exact definition or borders between managed hosting and colocation hosting. But to generalise; the major difference lies in the levels of control. In colocation hosting, you own your server and have full administrative and physical responsibility for it. The colocation provider is responsible for the server environment and the provisioning of power and cooling and fibre access. Whereas in managed hosting, the customer rents or leases the hardware, such as server equipment, from the hosting operator. The full administrative power and the responsibility for maintaining the integrity, performance, and reliability of the server, lies with the hosting provider.

This fundamental difference in ownership of the server has consequences on a number of areas making up the difference between managed hosting and colocation hosting. These areas are costs, hardware upgrades, software management and dimension of inhouse/outhouse expertise.

	Managed Hosting	Colocation Hosting
Cost	Monthly leasing and managing fees	Startup cost to purchase a server
Ownership	Lease your server	Own your server
Control	Less control	More control
Hardware Upgrades	Service provider upgrades	You upgrade
Software Choices	Service provider installs	You install
Expertise	No expertise required	Technical expertise required

Managed hosting can be a good choice for companies that have limited technological experience or expertise and would like someone else to handle tasks that require this knowledge for them. It is also a good choice for a company that doesn't want to have the initial capital expense of purchasing their own server. However, the more critical data is for the business, the more inhouse expertise and direct sovereignty over the servers might be desired to have.

Colocation is the preferred choice for companies that must meet specific compliance or data protection requirements. The same goes for organisations that need to broaden their current data center without actually paying for construction.

For some businesses, colocation is an important risk reduction measure in case disaster strikes. This goes for organizations with purchasing power for servers and with the ability to pay people to manage them. Colocation offers clients maximum flexibility over hardware as they are free to use custom storage configurations and fancy servers. It is viewed as an alternative for the maturing start-up that can no longer rely on the cloud to meet their unique needs.

Read more about the **differences and similarities between colocation and managed hosting** here.

Colocation vs Cloud

Cloud hosting is based on virtual servers which pull their computing resource from an underlying networks of physical web servers that might be located in various data centers. This provides maximum flexibility and scalability, but implies various security issues, lack of control of sustainability matters regarding the hardware and data center management - and can become costly in the long run depending on amounts of data stored and access needs.

Smaller businesses and start-ups usually opt for the cloud because of the scalable cost, low overhead, and the fact that IT competence is not needed inhouse. Larger operations often go to a colocation provider to house their servers because it saves money in the long run, and it offers the benefit and flexibility that comes with having total control over your servers.

The Advantages of Colocation

There are three important advantages to colocation: hardware choice, control, and privacy. Colocation users are free to buy the hardware that best suits their project - and this can be of critical importance in terms of competitive advantage in certain industries, like some machine learning algorithms benefitting from parallel processing on multiple GPUs.

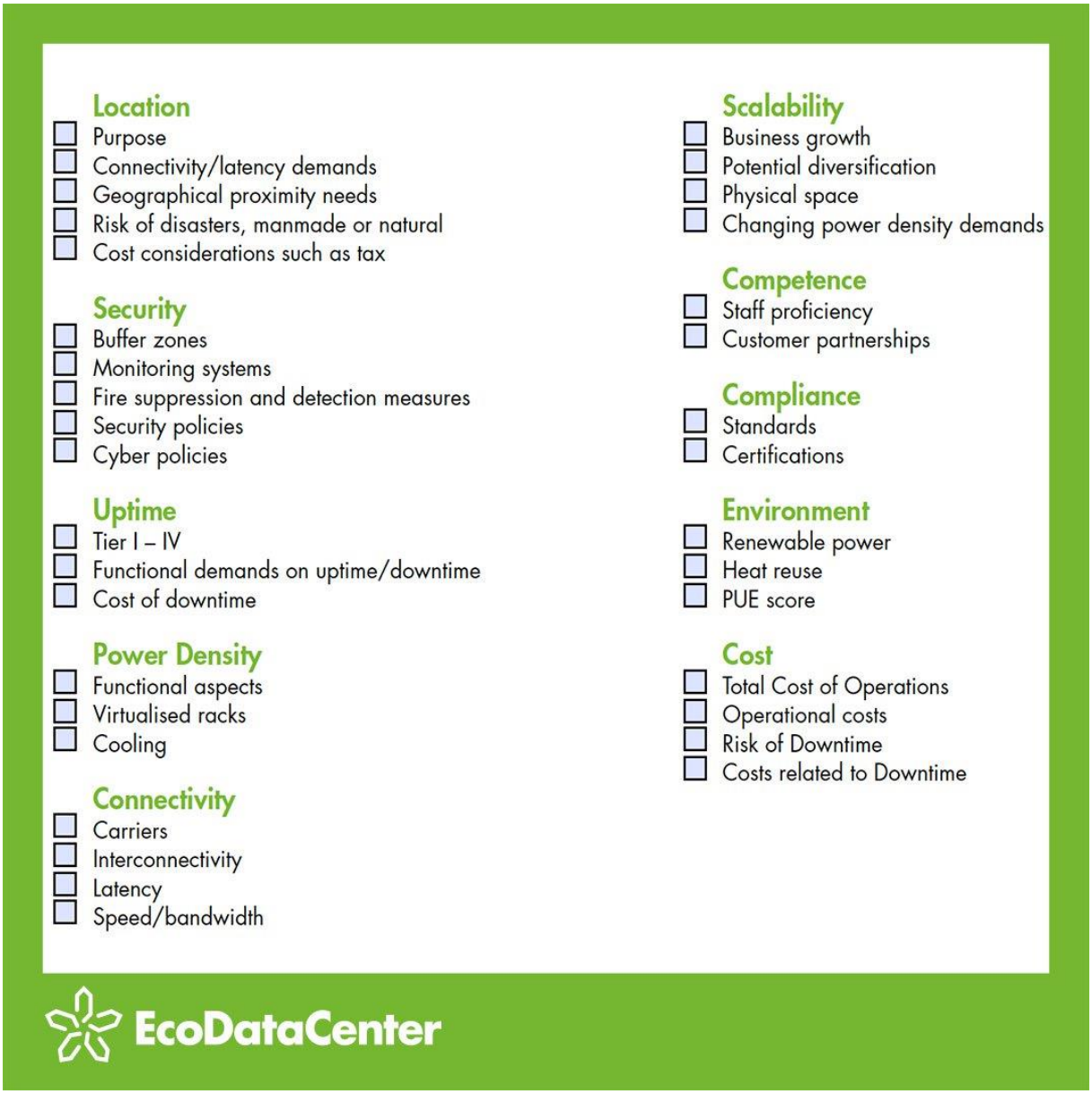
Colocation users also have complete control over how hardware and software are configured. Financial trading companies often prefer colocation because it allows them to build and configure extremely low-latency networks which isn't possible in the cloud.

Finally, colocation is the ultimate in server and data privacy. Only the owner runs software and stores data on colocated servers.

Do you want to read more about the **pro's and con's of the cloud**? Check out our blog post on the matter!

What to Look for in a Colocation Data Center

We have written an e-guide on the top nine considerations when choosing a colocation provider. Below is our popular check list.



If you want to know more, we recommend you to down-load this e-guide:

Download our whitepaper on how to evaluate data centers

Technical support, redundancy and price are sometimes mentioned as the three key parameters to investigate.

Modern Colocation Data Center Design

We can see a few trends in modern data center design, much of it driven from the need for large, hyper-scale data centers. New markets will require new approaches to data center design, creating facilities that can operate

with very different climate and energy profiles. This will require major innovation in the way data centers are designed, built and powered.

Data centers need to become **sustainable**. Efficiency in power usage (1), using only renewable power (2) and excess heat reuse (3) are building blocks for data center sustainability.

They also need to be prepared for higher **density** – with more kW per rack. Not all customers need high densities, but those who do might have a hard time finding options, as this might require other cooling solutions.

Higher capacity: As data centers try to go for their maximum capacity in order to run efficiently- they need all capacities to align, such as power with cooling etc.

Lower Total Cost of Ownership (TCO) – Power is a major cost factor in the TCO equation of a data center, and advancements in power technology are continuing to emerge. There's a tendency toward larger block sizes, the UPS's are getting a little bigger, and the generators are getting a little bigger.

Secure – Data centers need to be designed for a multi-layered physical solution with a focus on the perimeter, while also accommodating for customer security systems and personnel.

We have of course designed our data centers accordingly. Read more about **the difference between EcoDataCenter** and other data centers here.

Modern Data Center Terms

We have not compiled yet another data center glossary - the web is full of them. But instead we do explain the terms that are central to what we do and how we do it.

What is Colocation?

Colocation is a service where you as customer place your servers at a third party provider of data centers instead of running your own data center. You still own the servers. The operator, like EcoDataCenter, assumes responsibility for the server environment, i.e. safety, connection, operations and power and cooling. Colocation doesn't demand capital investments or the lengthy lead times involved in building one's own data center. Colocation can be bought where and when you need it, as you need it, in safe areas and with power and cooling in a highly accessible and redundant environment.

What is Tier IV?

Uptime Institute (the IT industry's most renowned global standard for designing, building and operating a data center) rank data center's operational safety from Tier I to Tier IV. Tier I can be compared to a server room with a power connection, whilst Tier IV has fully redundant (double, triple or quadruple) power and cooling systems with 99,99% uptime. Uptime being the same as the time all the servers are up and running. The opposite – downtime – stands for planned or unplanned outages.

We have elaborated on **Tier IV and uptime** in an earlier blogpost.

What is HPC?

HPC is a high-performance supercomputer cluster – it uses parallel processes to perform large amounts of advance, complex calculations in an efficient, reliable and fast way. A HPC facility has a totally different density than an ordinary data center and is measured in the number of kilowatts per rack. This density places high demands on the cooling and heating solutions.

What is ERE (Energy Reuse Effectiveness)?

ERE describes the energy recovery in a data center. In most data centers, the surplus heat is not reused, but being released straight into the

atmosphere. The microclimate around the data center is affected by the so-called “heat island” that results from the emission of heat. This can lead to changing life conditions for both flora and fauna – among other things. If, instead, the surplus heat is recycled and used to heat buildings or drive an industrial process, the data center has a high ERE.

What is PUE?

PUE is the ratio between the total amount of energy a data center uses and the amount of energy that the computer equipment uses. Simply put, PUE describes how much energy that is used for cooling, light and other overhead energy. A low PUE number means high energy efficiency.