



BUZZWORD DEMYSTIFIER

Edge vs. cloud computing

During the previous decades, an increasing number of industries benefitted from bringing their IT applications into the cloud, leveraging its scalability as well as its power for big data processing.



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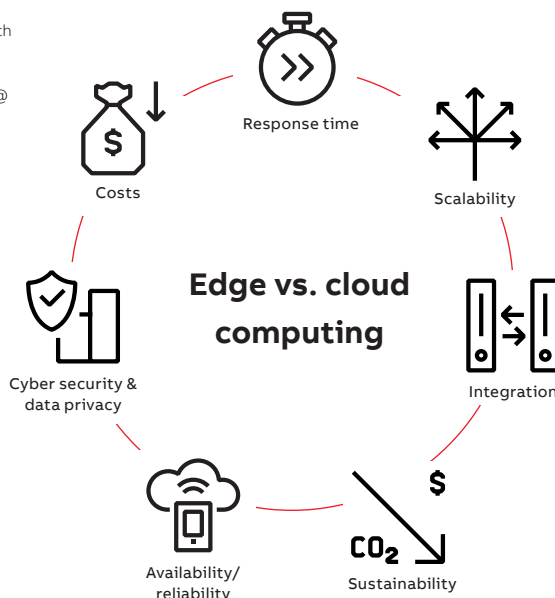
However, in many cases, more local solutions have benefits as well, eg, in terms of end-to-end latency, or data privacy. This is why edge computing is seen as a promising technology in many areas nowadays [1,2].

In edge computing, data processing tasks are executed close to where the data is generated, in order to enable fast response times. At the edge, the data can be preprocessed, filtered, or aggregated, such that a smaller amount of data needs to be sent to the cloud.

When comparing the benefits of edge and cloud computing, there are many aspects to consider

→01:

- **Performance:** With edge computing, it is easier to achieve low latency and high bandwidth due to the physical proximity of the computing nodes to the source of the data. This also means that higher volumes of data can be processed at faster response times.
- **Scalability:** Scalability and elasticity, however, are among the big advantages in favor of cloud computing.
- **Integration:** When connected to an edge device, legacy and very resource-constrained devices can also be integrated into an advanced OT-IT system architecture [3].
- **Sustainability:** There are many different opinions regarding whether edge computing contributes to a low-carbon society. Edge



01 Aspects to consider when comparing edge and cloud computing benefits.

References

[1] M. Satyanarayanan: The emergence of edge computing, *IEEE Computer*, 50/1, pp. 30–39, 2017.

[2] "Predicts 2021: Cloud and Edge Infrastructure Cloud Infrastructure Edge," Gartner. <https://www.gartner.com/smarterwithgartner/gartner-predicts-the-future-of-cloud-and-edge-infrastructure> [Accessed May 24, 2022].

[3] C. Ganz, "Cloud, edge and fog computing", *ABB Review* 2/2019, pp. 78–79.

[4] "Azure Sustainability – Sustainable Technologies | Microsoft Azure," <https://azure.microsoft.com/en-us/global-infrastructure/sustainability/> [Accessed May 24, 2022].

[5] "The Open Industry 4.0 Alliance: Open Industry 4.0 Alliance Technical Solution Design Principles. White paper, version 1.0, @2019 Copyright Open Industry 4.0 Alliance." Available: <https://www.automation.com/getattachment/d114d4ee-d9e2-426b-a788-a8f27991340a/OI4-Technical-White-paper.pdf?lang=en-US&ext=.pdf> [Accessed: May 24, 2022]

[6] User Association of Automation Technology in Process Industries (NAMUR): Reference architecture for Industrial Cloud Federation -- DIN SPEC 92222:2021-12, 2021.

computing helps to reduce traffic to the cloud as well as cloud storage and cloud operations, however, the providers of the big public clouds also have strong sustainability strategies [4].

- Availability/Reliability: The edge can operate even during times of unavailability of cloud services.
- Security/Privacy: On the edge, it is usually easier to protect applications and data. Having a secured edge gateway channeling the communication to the cloud, the attack surface is smaller, compared to a system with many devices establishing their own connections.
- Costs: Depending on the application, edge resources can be less expensive than cloud resources. Often, edge computing adds to a higher CAPEX, but has a lower OPEX if used in a continuous monitoring case.

All in all, both edge computing and cloud computing have their benefits and there are always trade-offs when deciding between these deployment alternatives for a specific application. Edge computing is not to be understood as an alter-

Edge computing is seen as a promising technology in many areas nowadays.

native to cloud computing but as a complement. Industry investment in edge computing has grown a lot within recent years, including efforts for industrial edge computing reference architectures and standardization eg, [5,6], accordingly, edge computing is well on its way to becoming a leading digital technology. •

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