

# Cloud Computing as the Foundation of Industry 4.0/5.0



## What is cloud computing?

Cloud computing delivers hardware and software services over the internet, allowing devices like smartphones to access email, storage, and applications through remote servers. It enables data storage, processing, and connectivity across systems. Cloud computing is a foundational technology for Industry 4.0/5.0, supporting smart manufacturing, automation, AI integration, and human-technology collaboration.

## How do businesses use cloud computing?

Cloud computing applications streamline managerial and operational processes by centralizing data storage, processing, and services. This means users do not need to install software on their laptops or workstations because they can access applications and data directly from the cloud. Tools like Slack enable real time information exchange and collaboration, supporting integrated teamwork and productivity.

A top concern for businesses is that the cloud presents greater security risks because a third party controls the server where the data is stored. In contrast to this belief, the cloud comes with its own security advantages, such as triggering on-going updates, which improves infrastructure security.

Although different, cloud computing mitigates risk differently from local hosting and provides several operational benefits. It reduces the expense of employing someone to manage a local server, improves scalability, and enhances reliability. Information stored through cloud computing is rarely lost.

## How is cloud computing used in Industry 4.0/5.0?

In Industry 4.0/5.0, cloud computing enables collaborative supply chains through real time visibility of centralized data. It allows organizations to respond quickly to disruptions, improve efficiency, and reduce risk while providing the scalable storage, processing power, and connectivity needed for advanced digital operations.

Cloud platforms integrate robotics, artificial intelligence, digital twins, and the Industrial Internet of Things, enabling automated communication, predictive maintenance, and real time analytics. In Industry 5.0, they also support human centric, resilient, and sustainable manufacturing through AI assisted collaboration.

### Core Capabilities Enabled by Cloud Computing



**Centralized Data Access**



**AI and Advanced Analytics**



**IIoT Integration**



**Digital Twin Support**



**Robotics and Automation**



**Sustainability Monitoring**



**Human Technology Collaboration**