

# Data Synchronization

- ❖ With the cloud quickly becoming a conduit for an unprecedented supply of data, the importance of data accuracy, consistency, and privacy is growing.
- ❖ Things that may seem like a minor data error or glitch can have a major negative impact on sales, decision-making, and customer retention.
- ❖ However, sorting through data and syncing it with existing databases, then parsing it out on a regular basis — all while maintaining data integrity — can be tedious and costly.
- ❖ That is why data synchronization has become one of the most valuable tools to manage data.
- ❖ Data synchronization is the ongoing process of synchronizing data between two or more devices and updating changes automatically between them to maintain consistency within systems.
- ❖ While the sheer quantity of data afforded by the cloud presents challenges, it also provides the perfect solution for big data.
- ❖ Today's data solutions offer quick and easy tools to bypass monotonous tasks, resulting in data in harmony throughout the system.

## What is data synchronization?

- ❖ Data synchronization ensures accurate, secure, compliant data and successful team and customer experiences.
- ❖ It assures congruence between each source of data and its different endpoints.
- ❖ As data comes in, it is cleaned, checked for errors, duplication, and consistency before being used.
- ❖ Local synchronization involves devices and computers that are next to each other, while remote synchronization takes place over a mobile network.
- ❖ Data must always be consistent throughout the data record.
- ❖ If data is modified in any way, changes must upgrade through every system in real-time to avoid mistakes, prevent privacy breaches, and ensure that the most up-to-date data is the only information available.
- ❖ Data synchronization ensures that all records are consistent, all the time.

## Data synchronization: The key to trusted data

The importance of data synchronization grows in step with increased accessibility to cloud-based data as well as access to mobile devices.

Mobile devices use data for basic operation as well as personal information for apps, websites, and email.

Updates to information generated by the user as well as the end target must be constant and secure.

This synchronization process requires clean, consistent data for product and service competence, but also for data governance issues like security and regulatory compliance.

Data conflicts can result in errors and low data quality, which consequently leads to a lack of trusted data down the line.

With data synchronization properly implemented throughout a system, a business will see performance improvement in many areas, including:

- Logistics and transportation
- Sales team productivity
- Order management
- Invoice accuracy
- Business systems
- Cost efficiency
- Reputation management

Data accessibility and error resolution afford time savings, allowing emphasis to be put on important business development processes like marketing, new product development, and strategic decision-making.

Virtually everyone benefits from clean, synced data.

Customers receive product information and service that meets their specific needs

Business users can interact with all department members using up-to-date information, in real-time, even globally

Executives receive the latest data when making important strategy decisions

Stockholders can easily stay on top of their business interests

Manufacturers access the most recent updates or changes for accurate design and production

Distributors have access to the most recent product and marketing information

## **Exploring data synchronization methods**

There are a few types of data synchronization methods. Version control and file synchronization tools can make changes to more than one copy of a file at a time. The other two, distributed and mirror, have more specific uses.

- **File Synchronization:** Faster and more error-proof than a manual copy technique, this method is most used for home backups, external hard drives, or updating portable data via flash drive. File synchronization ensures that two or more locations share the same data, occurs automatically, and prevents duplication of identical files.
- **Version Control:** This technique aims to provide synchronizing solutions for files that can be altered by more than one user at the same time.
- **Distributed File Systems:** When multiple file versions must be synced at the same time on different devices, those devices must always be connected for the distributed file system to work. A few of these systems allow devices to disconnect for short periods of time if data reconciliation is implemented before synchronization.
- **Mirror Computing:** Mirror computing is used to provide different sources with an exact copy of a data set. Especially useful for backup, mirror computing provides an exact copy to just one other location — source to target.

## **Top five data synchronization challenges**

Organizing your business data sounds like a simple task.

But consider the different systems in a single business — CRM, product management, employee portals, customer support, billing, and invoicing.

Multiple users enlist data from the cloud on different applications, while maintaining security and integrity.

The process can become a time and cost burden at best, a nightmare at its worst. What kinds of challenges are associated with data synchronization?

### **Security**

Security and confidentiality are two non-negotiable governance issues that businesses must carefully manage.

How data moves through your system needs to meet certain regulatory standards as they relate to specific industries as well as to privacy laws.

Unique systems have different policies and access requirements. Your data encryption methods must be compliant and consistent within each system.

A synchronization tool ensures that changes made to your data are updated in a manner that meets the standards set by your specific security needs.

Data breach or leaks, problems with trade licenses or government regulations, and reputation loss are just a few of the negative consequences of a system that doesn't work.

All these effects typically lead to a loss of customers and revenue.

### **Data quality**

Multiple systems used by multiple business users mean that data is structured differently throughout its lifecycle.

Ongoing updates and constant validation must be integrated and synchronized from all sources while maintaining strict integrity of information within a secure environment.

Without a seamless synchronization system in place, data transactions and authorization can be delayed, and management controls can be affected by inaccurate data.

Regular synchronization of sources and targets continually improves the value of your data but making it work specifically for your business.

### **Management**

Data organization must be managed and integrated in real-time to ensure accuracy and prevent errors like rejected records or data that is in an incorrect format.

For example, manufacturing needs updates on time to assure product readiness. Customers want to know when they will see delivery of their order.

Real-time synchronization is the only way to meet these expectations.

### **Performance**

To successfully synchronize your data, it must pass through five phases:

- Extraction from the source
- Transfer
- Transformation
- Transfer
- Load to target

If any of these steps are missed or incomplete, it can impact the result. Especially as the cloud produces a large volume of data, synchronization must be a priority to keep performance at its peak.

### **Data complexity**

Data formats must change and grow with the addition of new vendors and customers, as well as to meet the needs of continuous technological advances.

The more data the more complexity becomes an issue to appropriately interface data in new situations, while enabling it to continue to work with the old systems.

Further, as technology changes, data that is updated to a new system must be consistent with its original source and target.

Data synchronization stabilizes the incoming and outgoing data making sure it is updated and compliant across the board.