



FRONT·COMMERCE

Published June 2024



WHITE PAPER

UNDERSTANDING SERVER-SIDE TRACKING FOR ENHANCED DATA COLLECTION

www.front-commerce.com



CONTENTS

1. Introduction
2. Server Side Tracking, and it's relevance
3. Orchestrating Server-Side Tracking Data Flow
4. Client-Side Tracking vs. Server-Side Tracking
5. Server-Side Tracking and Data Privacy
6. Exploring Event-Driven Use Cases
7. Leveraging Server-Side Tracking for Content Creation
8. Front-Commerce and Server-Side Tracking
9. Conclusion





INTRODUCTION

Are you concerned about the accuracy of your website data due to privacy restrictions and ad blockers? Traditional methods of collecting data through browser-based scripts, known as client-side tracking, are facing increasing limitations. This guide explores server-side tracking, a powerful alternative that ensures reliable data collection, enabling you to make informed decisions about your business.

The end of third-party cookies and increasing browser privacy restrictions require businesses to adapt their data collection strategies. Focusing on first-party data, leveraging new technologies like server-side tracking, and prioritizing user privacy are key to success in digital industries.

There were 1,774 data breaches in 2022, affecting 422 million people.*

We're in a new world in which data may be more important than software.

As privacy regulations tighten and the use of ad blockers grows, client-side tracking often results in incomplete or inaccurate data, hindering effective marketing and analytics efforts. Server-side tracking overcomes these obstacles by collecting data directly from the server, circumventing ad blockers and browser restrictions. This method ensures higher data accuracy and reliability, enhances data quality, and addresses privacy concerns by avoiding the exposure of sensitive information on the client side.



SERVER SIDE TRACKING, AND IT'S RELEVANCE

Server-side tracking (SST) is a method of collecting and processing user data on the server side, bypassing the limitations of client-side (browser-based) tracking. This approach offers substantial benefits in data accuracy, privacy, performance, and control, making it increasingly important as the use of third-party cookies declines.

Benefits of Server-Side Tracking

Server-side tracking yields significant benefits, including improved data quality and cross-platform compatibility for deeper user insights. Additionally, SST enhances data privacy by minimizing client-side collection of personal information and keeping user data on secure company servers. Businesses gain greater control and flexibility with a central data repository, enabling real-time, event-driven actions and data enrichment with other sources.

The Benefits

- Improved data quality
- Cross-platform compatibility
- Enhanced data privacy
- Improved data security
- Improved performance
- Greater control & flexibility
- Event-driven actions
- Data enrichment

Furthermore, SST addresses challenges posed by the decline of third-party cookies and browser privacy restrictions. By bypassing these limitations, SST delivers improved tracking accuracy and facilitates user consent management for compliance with data privacy regulations. Server events, which are individual user interactions captured on the server, provide the raw data points.

The Challenges Addressed

- Reduced Tracking Accuracy
- Limited Data Collection
- Privacy Compliance Concerns
- Performance Issues
- Improved Tracking Accuracy
- Enhanced Data Privacy and Compliance

Server-side tracking then takes over, collecting, processing, and analyzing these events to transform them into actionable insights for businesses. This powerful combination empowers businesses to make data-driven decisions and achieve their marketing goals.



Server-Sent Events and Server-Side Tracking: Working Together

Server-Sent Events: These are individual user interactions captured on your server, such as a product purchase, button click, or form submission. They provide granular details about user behavior.

Server-Side Tracking: This is the broader process of collecting, processing, and analyzing server-sent events. It involves capturing events, enriching them with context (like timestamps or user IDs), and sending them to analytics platforms for further analysis. Server-side tracking transforms raw server-sent events into actionable insights.

A typical server-side tracking system includes:

- **Web Server:** Receives user requests and triggers server-sent events based on actions.
- **Event Collection Layer:** Captures server-sent events generated by the web server, using custom scripts or dedicated tools.
- **Data Processing Unit** (Optional): Cleans, transforms, and enriches raw server-sent event data before further processing. This might involve filtering irrelevant data or adding context like timestamps and user IDs.
- **Worker Process** (Optional): Background process that handles processing and sending server-sent events to analytics platforms, ensuring efficient data handling without affecting main web server performance.
- **Analytics Platform:** The final destination for processed server-sent events, such as Google Analytics or Segment, which provides insights into user behavior, marketing effectiveness, and website performance.

Elements of a Server-Side Tracking System

Web Server

Event Collection Layer

Data Processing Unit

Worker Process

Analytics Platform



Worker Processes in Server-Side Tracking: Why They Matter

Worker processes, though optional, offer significant benefits:

Improved Performance

Offloading data processing to a separate worker process prevents it from impacting main web server responsiveness, ensuring a smooth user experience during peak traffic.

Scalability

Worker processes can be scaled horizontally to handle increased data volumes, allowing your tracking system to grow with your website traffic.

Flexibility

Provide a dedicated environment for complex data manipulation tasks, like data enrichment or custom transformations, without affecting core web server functionality.

Expanding Event-Driven Tracking

Event-driven tracking can be applied beyond user behavior to various use cases:

Application Monitoring

Track server-side errors, system performance metrics, and API usage patterns to proactively identify and troubleshoot issues.

Security Monitoring

Capture and analyze security events like login attempts and suspicious activity to enhance security

CMS Activity Tracking

Monitor actions within your CMS, such as content creation and editing, to gain insights into content workflows and user activity.

Machine Learning Applications

Use server events as training data for machine learning models to improve predictions and recommendations.

Embracing event-driven tracking allows for valuable insights from a broader range of data sources, leading to a comprehensive understanding of system health, user behavior, and overall performance.



CLIENT-SIDE TRACKING VS. SERVER-SIDE TRACKING

Traditional tracking methods often leave you with incomplete data, impacting your ability to optimize website design, fuel targeted marketing campaigns, measure ROI, and identify sales funnel bottlenecks.

CDN Caching and Blockers: Hurdles for Client-Side Data Collection

CDN caching improves loading times but can cache tracking scripts, resulting in missed real-time user behavior. Additionally, ad blockers and privacy extensions can prevent tracking scripts from running, leading to data loss. These factors can significantly affect data reliability and completeness in client-side tracking.

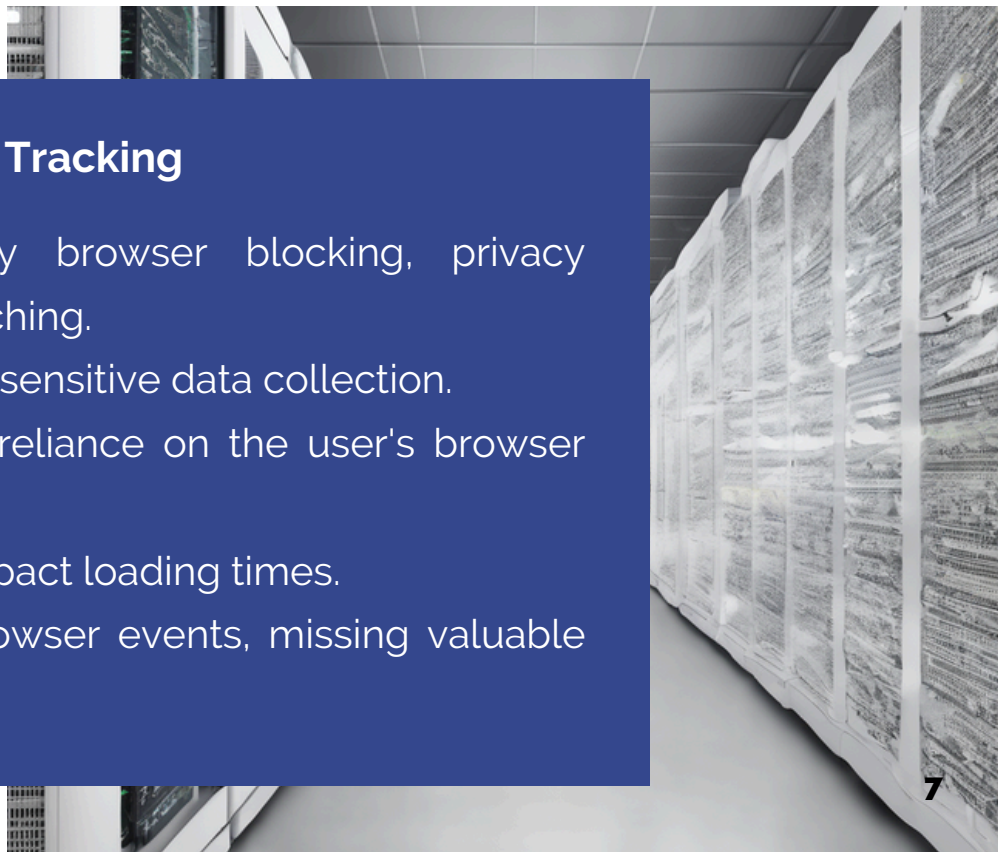
Server-Side Tracking: Preserving User Identities

Server-side tracking maintains unique (anonymous) identifiers, offering better control over user identification and mitigating client-side risks. Server-side sessions assign a unique session ID to each visit, tracking user behavior throughout the session. User IDs leverage login credentials for tracking activity across sessions. This approach can also combine client-side identifiers with server-side validation, storing identifiers client-side but validating them server-side.

Server-side tracking offers a privacy-conscious and reliable alternative, bridging the gap by capturing both client-side and server-side events for a comprehensive view of user behavior.

Limitations of Client-Side Tracking

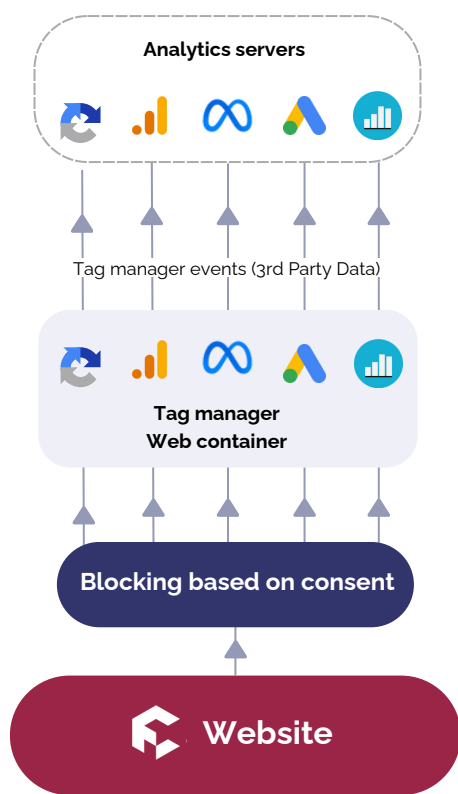
- Data loss affected by browser blocking, privacy extensions, and CDN caching.
- Privacy concerns due to sensitive data collection.
- Limited control due to reliance on the user's browser environment.
- Excessive scripts can impact loading times.
- Limited to capturing browser events, missing valuable server-side data.



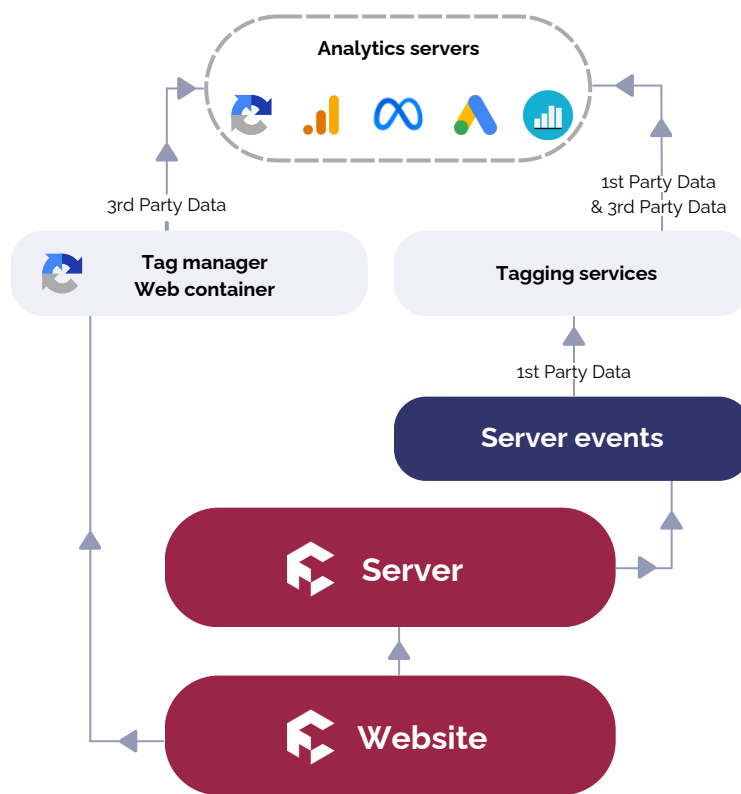
A HEAD-TO-HEAD COMPARISON



Client-Side Tracking



Server-Side Tracking



Feature	Client-Side Tracking	Server-Side Tracking
Data Collection Point	User's Browser	Web Server
Data Coverage	Primarily User Behavior	User Behavior, Server-Sent Events
Dependency on Client-Side	Yes (JavaScript)	No
Impact of Browser Blocking	Significant Data Loss	Minimal Impact
CDN Caching Impact	Potential Data Incompleteness	No Impact
Privacy Compliance	Relies on User Consent	More Control over Data Collection
Performance Impact	Potentially Impacts Loading Times	Lower Performance Overhead
Implementation Complexity	Generally Easier to Implement	More Complex Setup
Cost	Typically Lower Cost	May Require Additional Server Resources



SERVER-SIDE TRACKING AND DATA PRIVACY

As data privacy regulations like GDPR and CCPA gain prominence, businesses must collect and manage user data responsibly. Server-side tracking offers a solution that aligns with these regulations, minimizing the collection of personal information. Using anonymous identifiers strengthens user privacy while allowing effective tracking of user journeys, helping businesses operate in a privacy-conscious manner and build trust with users.



Server-side tracking ensures compliance with data privacy regulations through several features:

- **Transparency and User Consent:** Businesses can implement clear, user-friendly consent mechanisms. This ensures users understand what data is collected and how it will be used before processing.
- **Data Minimization:** Server-side tracking allows businesses to define what data is collected, focusing on essential data points for user behavior analysis and avoiding unnecessary personal information.
- **Data Ownership and Control:** With data collected on the server, businesses have more control over storage, access, and usage. They can implement security measures and anonymization techniques to safeguard user privacy.



30% OF COMPANIES ARE ADOPTING SERVER-SIDE TAGGING

According to [Forrester's research in 2023](#), 30% of companies are embracing server-side tagging primarily because of enhanced data privacy and security measures.

Adhering to these principles helps businesses build trust with users and demonstrate commitment to responsible data practices.

Collecting user data is necessary for tracking user journeys, but it doesn't require personally identifiable information (PII). Anonymous identifiers offer a solution:

Pseudonymization: Hashing or encryption can transform user IDs into anonymous identifiers, tracking behavior across sessions without revealing identities.

Session IDs: Assigning temporary session IDs to visits tracks interactions within specific timeframes without linking to a specific person.

Segmentation: User data can be segmented based on anonymized criteria like demographics or interests, understanding behavior patterns without infringing on privacy.

Leveraging anonymous identifiers and data segmentation allows businesses to gain insights into user behavior while minimizing personal information collection, fostering user trust and compliance with data privacy regulations.

Exploring Event-Driven Use Cases

Server-side tracking extends beyond traditional user behavior tracking, unlocking

“

Tag everything! Even if you think that information cannot be exploited, you still need to tag everything as it is always pertinent to benefit from the maximum amount of information available on your traffic. - Douglas Rushkoff



new possibilities through event-driven use cases:

- **Application Monitoring:** Track server-side errors, application performance metrics, and API usage in real-time. This enables proactive issue identification and resolution before impacting users.
- **Security Monitoring:** Enhance security by capturing and analyzing events like login attempts, suspicious activity, or potential breaches, allowing prompt responses to threats.
- **CMS Activity Tracking:** Gain insights into content workflows by tracking actions like content creation, editing, and publishing within your CMS.
- **Machine Learning (ML) Applications:** Use server events as training data for ML models, enabling them to learn from user behavior and improve predictions or recommendations.

These examples illustrate the vast possibilities of server-side tracking, offering a comprehensive understanding of system health, user behavior, and overall performance.



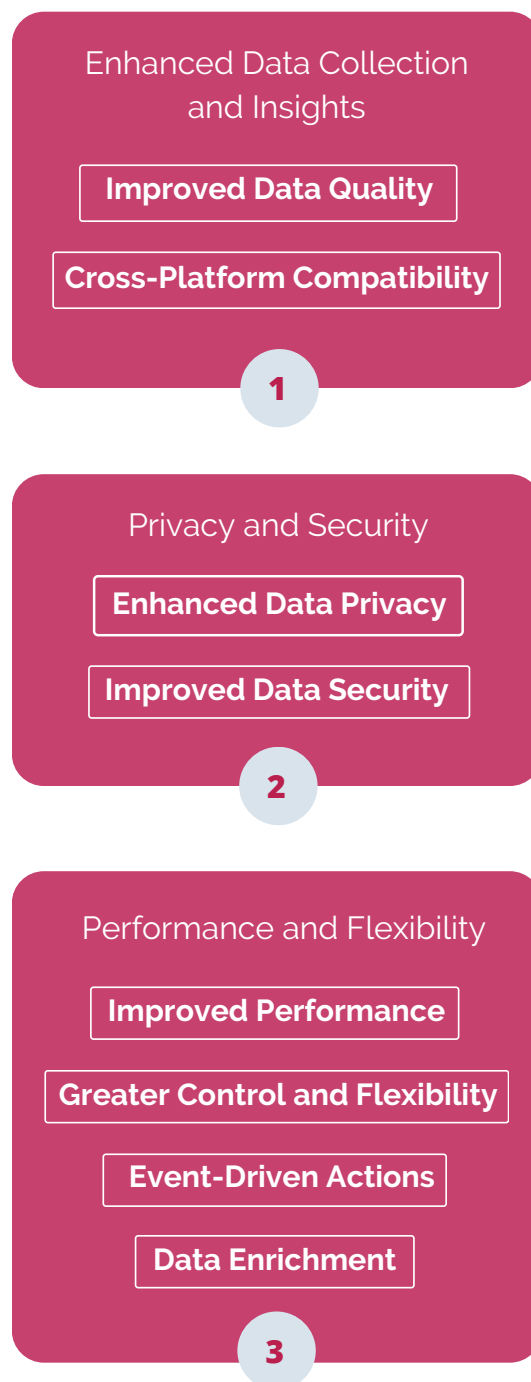
Webhooks, Notifications, & More

Server-side tracking not only collects data but also triggers automated actions based on specific events:

- **Webhooks:** Receive real-time notifications for critical server-side events, enabling immediate actions like sending alerts to the IT team during system errors.
- **Triggered Emails and Notifications:** Personalize communication with automated emails or push notifications based on user behavior, such as abandoned carts reminders.
- **Inventory Management:** Maintain stock accuracy by monitoring purchases and updating inventory levels in real-time, preventing overselling and a negative customer experience.
- **Dynamic Content Delivery:** Enhance UX by triggering changes in website content or product recommendations based on captured user behavior data.
- **Server-Sent Events:** Trigger automated actions based on user interactions, such as adding products to a wishlist or shopping cart when users click on product images.

Combining event-driven tracking with automated actions creates a dynamic,

BENEFITS OF SERVER-SIDE TRACKING



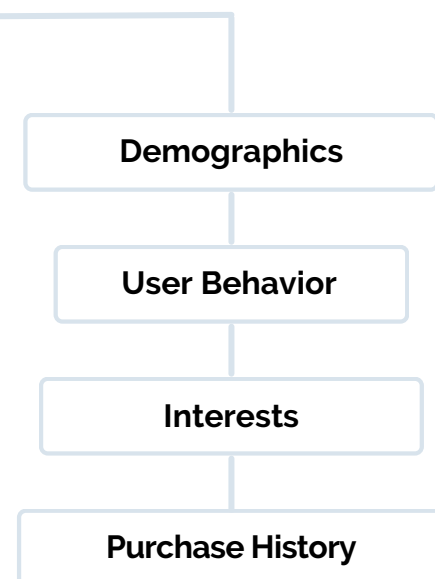
responsive system that adapts to user behavior in real-time, improving operational efficiency, customer experiences, and data-driven decision-making.



LEVERAGING SERVER-SIDE TRACKING FOR CONTENT CREATION

Segmentation for Tailored Messaging

Server-side tracking enables tailored messaging by segmenting audiences based on demographics (age, location, gender with consent), behavior (pages viewed, time spent, product interactions), interests inferred from content engagement, and purchase history. By segmenting your audience, you can create targeted messages per segment. For example, you can send email campaigns with product recommendations based on browsing history or abandoned carts.



Personalized Product Recommendations

- Real-time Recommendations: Suggest similar or complementary products based on current browsing behavior, implemented on product pages or in shopping carts.
- Post-Purchase Recommendations: Use past purchase data to suggest related items through email campaigns or personalized product carousels on your website.

Effective Email Campaigns

- Personalized Subject Lines: Use user names or purchase history to personalize subject lines, boosting open rates.
- Dynamic Content: Segment your email list and create content that adapts to each segment's interests and purchase history.
- Triggered Campaigns: Automate emails based on user behavior, such as cart abandonment, welcome emails, or win-back campaigns for inactive users.

Additional Uses

- Optimize Website Content: Tailor content strategy based on what resonates with different segments.
- Targeted Social Media Campaigns: Personalize social media ads to reach users most likely interested in your products or services.
- Improve User Experience: Use data to understand pain points and optimize website navigation.

FRONT-COMMERCE AND SERVER-SIDE TRACKING

Traditional website tracking relies on client-side solutions like Google Tag Manager (GTM) with cookies and JavaScript tags. While convenient, this approach has limitations affecting data collection and user privacy. Front-Commerce offers an alternative with server-side tracking, providing a more comprehensive and reliable solution.

Front-Commerce facilitates server-side tracking, handling data collection and transmission securely:

- Server-Side data collection captures user interactions directly on your server, independent of browser settings or ad blockers.
- Event processing processes server-sent events triggered by user interactions, enriching data with additional context.
- Data is securely transmitted to your analytics platform or data warehouse, ensuring data integrity and compliance with privacy regulations.

Integration with Existing Tagging Systems

Front-Commerce integrates seamlessly with existing tagging systems like GTM. You can continue using GTM for managing other functionalities while relying on Front-Commerce for secure data collection.

Front-Commerce handles Data Collection & Transmission



Server-side Data Collection

User interactions are directly captured on your server, independent of browser settings or ad blockers.



Event Processing

Server-sent events triggered by user interactions are processed, enriching data with additional context.



Data Transmission & Processing

Data is securely transmitted to your analytics platform or data warehouse, ensuring compliance with privacy regulations.



BENEFITS OF SST IN FRONT-COMMERCE

1. Cost Savings:

- Reduced reliance on third-party tools eliminates the need for multiple client-side tags and tracking tools, saving on subscriptions and maintenance fees.
- Accurate data from server-side tracking reduces the need for additional data gathering methods, cutting costs associated with market research.

Front-Commerce's server-side tracking offers significant advantages over traditional client-side methods, translating into improvements in cost efficiency, data quality, compliance, and functionality.

Example: A clothing retailer can reduce marketing research costs by gaining deeper insights directly from user behavior data using collected on Front-Commerce's server.

2. Improved Data Quality:

- Bypassing browser limitations avoids issues like ad blockers and browser privacy settings that hinder client-side data collection, leading to a more complete and accurate user behavior picture.
- Enhanced data enrichment processes server-sent events, adding context like user IDs or timestamps for a granular understanding of user journeys.

Example: An e-commerce store can capture all product interactions and enrich the data with user IDs, enabling personalized recommendations and retargeting campaigns.

3. Enhanced Compliance:

- Reduced reliance on third-party Cookies provides a future-proof solution that collects data in a privacy-compliant manner, minimizing the risk of non-compliance penalties.
- Prioritized user privacy minimizes reliance on intrusive tracking methods, aligning with privacy regulations like GDPR and CCPA.

Example: A website can ensure user privacy by collecting data without third-party cookies, building trust and avoiding fines for non-compliance.

4. Extended Functionality:

- Seamless integration with existing systems integrates with existing tagging systems like GTM, allowing continued use for marketing tags while ensuring secure data collection.
- Flexibility with external systems connects with various analytics platforms and data warehouses, letting you choose the tools that best suit your business needs.

Example: A marketing agency can use GTM for managing marketing tags and leverage Front-Commerce for secure data collection, integrating the data with their preferred analytics platform for comprehensive analysis.



FUTURE-PROOFING E-COMMERCE DATA COLLECTION

Server-side tracking is an excellent solution for accurately tracking customer data in the face of browser limitations and privacy regulations increasingly hinder client-side tracking methods. By collecting data directly from the server, businesses can bypass ad blockers, privacy settings, and third-party cookie restrictions, ensuring more comprehensive and reliable data collection. This method enhances data accuracy, improves user privacy, and aligns with evolving compliance standards, making it an essential approach for modern businesses.

Front-Commerce is a powerful solution for businesses seeking to leverage server-side tracking, offering simplified implementation, comprehensive data collection, and support for data-driven decision-making. Its seamless integration with existing GTM setups minimizes development work by focusing on tag configuration.

By bypassing browser limitations, Front-Commerce captures a complete picture of user behavior, providing valuable insights for optimization and marketing strategies. It ensures data accuracy, reduces manipulation risks, and prioritizes user privacy, adhering to data security best practices. As a future-proof solution, it reduces reliance on third-party cookies, ensuring compliance with evolving privacy regulations. Additionally, Front-Commerce offers flexibility by integrating with various analytics platforms and data warehouses, allowing businesses to choose the tools that best suit their needs.

Compared to building custom server-side tracking solutions, Front-Commerce reduces complexity with a pre-built, user-friendly platform and streamlined implementation through detailed partner guides like those from Addingwell. It also provides continuous support and updates to keep up with evolving technologies and privacy regulations. Overall, Front-Commerce enables businesses to unlock the full potential of server-side tracking, improving data collection, user experience, and marketing effectiveness.

Put your customer at the forefront of your business. Empower your teams to deliver an authentic brand experience in a digital context with the tools they need.



THE BIT WHERE WE TOOT OUR OWN HORN

Front-Commerce is the only digital storefront that improves the customer, merchant & developer experience, at the same time.

An ultra-fast front-end based on PWA & MACH standards, we help brands evolve their current e-commerce platform to a headless commerce approach by integrating the back-end of their choice with Front-Commerce's best of breed technical stack based on React, NodeJS & GraphQL.

Front-Commerce does the decoupling of the frontend and backend for its clients to provide a state of the art front-end experience and a headless commerce architecture. Our solution is compatible with most backends, allowing us to integrate easily into your systems. You can stay in touch with your customers and we keep all technical considerations up to date.

[Get the fact sheet](#)

Contact Front-Commerce

contact@front-commerce.com

 [click here!](#)

Some of the brands powered by Front-Commerce

JEROME DREYFUSS ✨ DEVIALET CENTRAKOR KAPORAL

 **autobernard.com**

lullu
— SUR LA TOILE —

FABRIQUE DE STYLES

BONNE GUEULE


THUASNE


eden
botanicals


ROBERTET
— GROUP —

collégien
Depuis 1947


CHAÎNE THERMALE DU SOLEIL


PetDistrib

