

# Google Firebase Presentation

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Firebase

# Introduction

- Real-time communication is essential in today's fast-paced world.
- This study introduces Google Firebase API as a real-time database server.
- Firebase is more than a database; it offers features for secure, communication-based apps.
- Focus on how Firebase supports backend and storage needs while simplifying development

# Types of Services

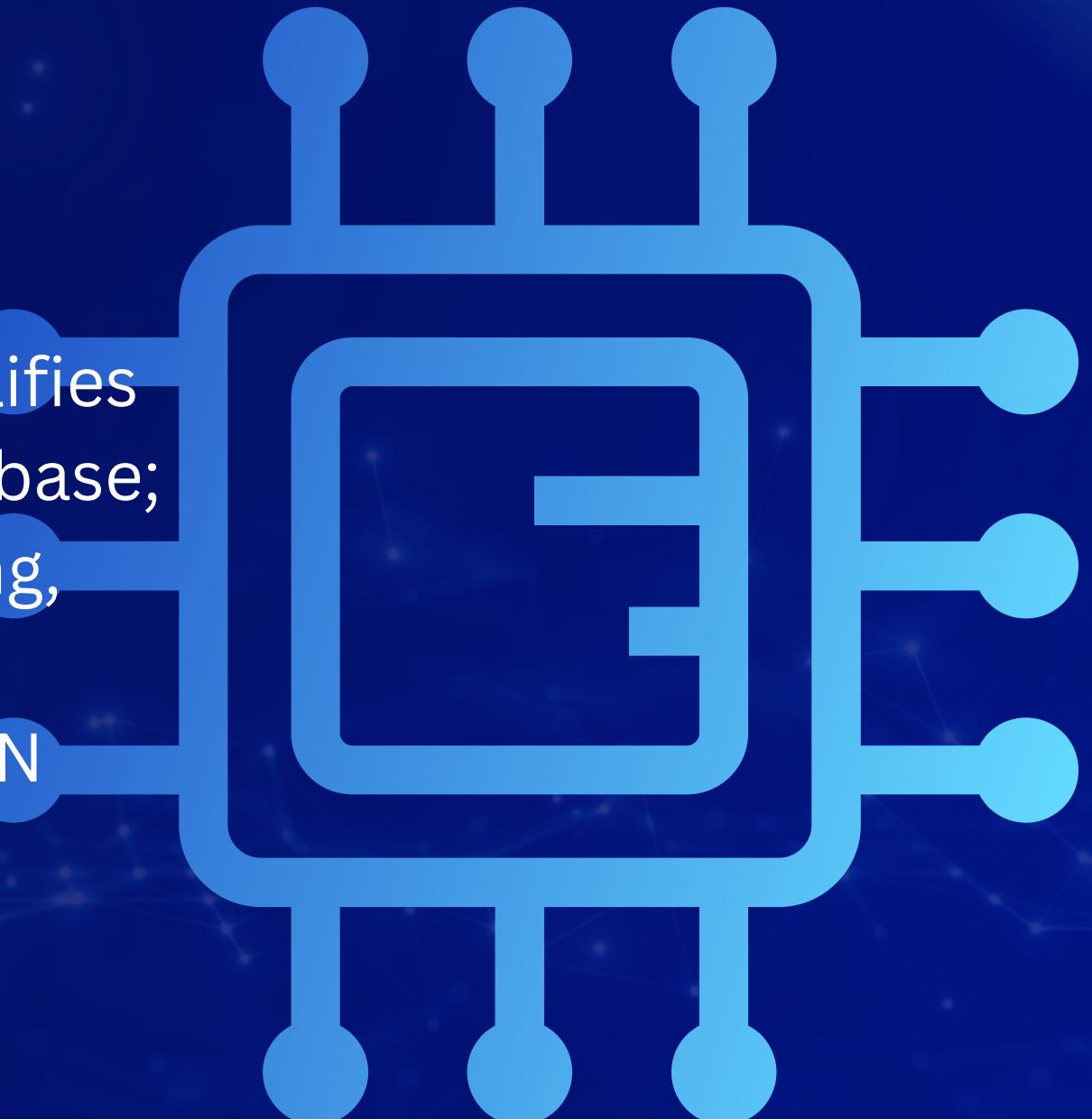
- SaaS (Software as a Service): Applications hosted by a third party and accessed via the web.
- PaaS (Platform as a Service): Platforms and tools for app development hosted by a third party.
- IaaS (Infrastructure as a Service): Virtualized computing resources managed by a provider.
- BaaS (Backend as a Service): Outsourced backend services, focusing on the frontend



# FireBase

Firebase, acquired by Google in 2014, is a platform that simplifies application development. It's more than just a real-time database; it's a comprehensive toolkit that provides features like hosting, analytics, authentication, and messaging.

Firebase uses a NoSQL database, where data is stored in JSON format. Unlike traditional HTTP protocols, Firebase uses WebSocket, enabling faster and more secure real-time synchronization of data. Moreover, it incorporates OAuth2 authentication for secure user sign-ins through platforms like Google, Facebook, or Twitter.



# Key features of Firebase

- Real-Time Database:

Firebase syncs data in real-time, even across platforms like Android, iOS, and web. No SQL queries are required, making it easier and faster to use.

- Authentication:

Firebase supports multiple authentication methods, including Gmail, Facebook, and Twitter. Each user is assigned a unique identifier, ensuring secure and personalized access.

- Cloud Messaging:

Firebase Cloud Messaging (FCM) enables cross-platform messaging at no cost. Developers can send notifications and messages seamlessly.

- Hosting:

Firebase provides fast and secure hosting for static files like HTML, CSS, and JavaScript. Features include regional CDNs and SSL certificates for secure communication.

- Storage:

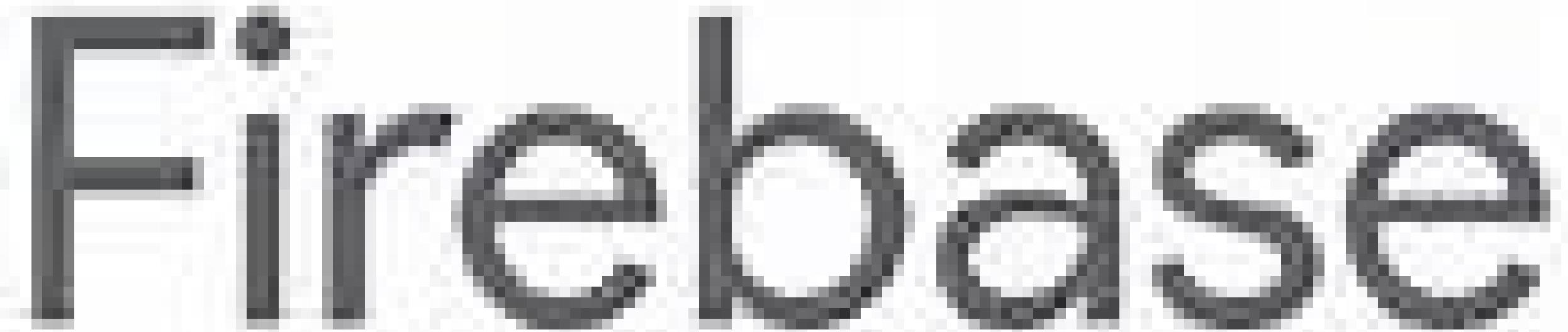
Firebase stores multimedia files like images and videos efficiently. The SDK enables easy file uploads and downloads with control over permissions.

- Crash Reporting:

Firebase tracks application crashes in real-time, enabling developers to address errors promptly.



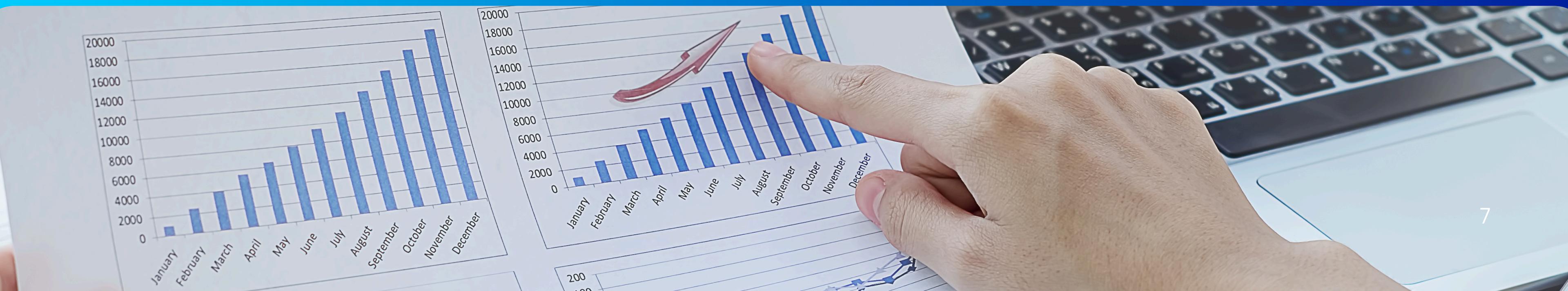
Firebase



# Firebase is a NoSQL Database Design

# Adding Firebase to a Project

1. Create a project in Firebase Console.
2. Enable necessary features like Authentication and Storage.
3. Integrate Firebase SDK into your app.
4. Set up billing (Pay-as-you-go model).



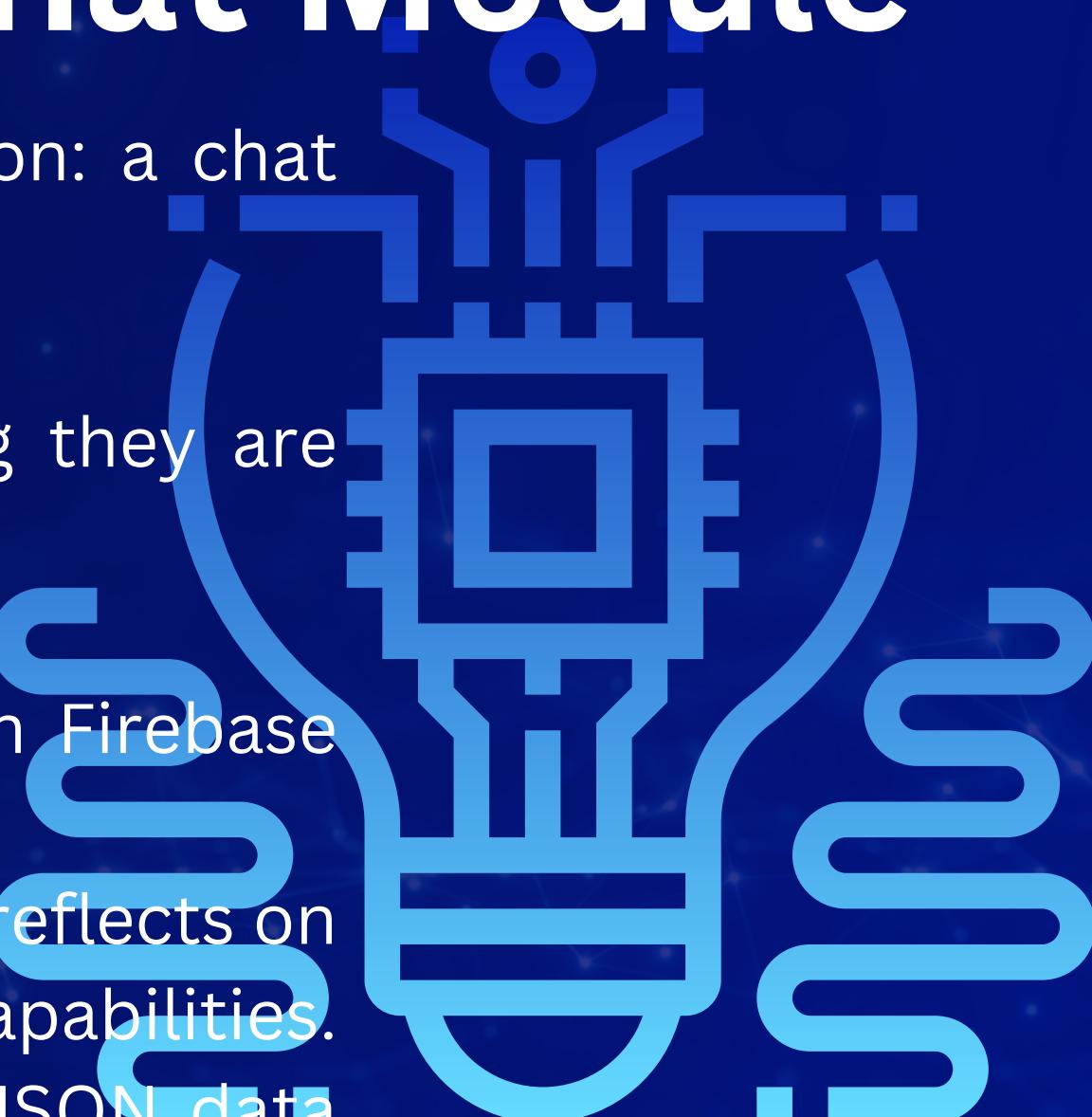
# Real-Time Use Case: Chat Module

Now, let's look at a real-world example of Firebase in action: a chat application.

In this module:

- Firebase's real-time database stores messages, ensuring they are instantly visible to users across devices.
- Firebase authentication secures each user's identity.
- Multimedia messages like images or videos are stored in Firebase Storage.

For instance, when one user sends a message, it immediately reflects on the recipient's screen due to Firebase's synchronization capabilities. This is achieved using simple WebSocket connections and JSON data structures.



# Conclusion

To sum up, Firebase is a game-changer in application development. It reduces the technical burden of managing backends, enabling developers to focus on delivering better user experiences. Features like real-time databases, authentication, and storage make Firebase a powerful and versatile tool.

As Firebase continues to evolve, it's poised to support future innovations in real-time applications. Whether it's chat apps, gaming platforms, or IoT systems, Firebase remains a reliable choice for developers.





Thank you