



# Baidu-Arm Cloud Mobile Platform



Case Study

## Company snapshot

Name: **Baidu, Inc**  
Vertical: **Search Engine and Internet Services**  
Size: **~50,000 employees**  
HQ: **Beijing, China**  
Founded: **2000**

## Baidu Goal

The arrival of 5G is accelerating the development of the Android cloud industry based on the Arm architecture. The Baidu Cloud mobile business provides a safe, reliable and efficient technology cornerstone for the industry, with strong support for cloud gaming and cloud office business innovation, and unlimited possibilities for a wide range of AIoT devices with restricted computing power.

In 2013, Baidu commercially deployed Arm-based servers for the first time. Today, Baidu is choosing an Arm-based server platform for their cloud mobile platform services. According to Pengfei Shen, deputy general manager of Baidu Security Business Group, “Arm-based servers deliver an optimized architecture and high performance for the delivery of Baidu’s cloud-based mobile platform services.”

## Solution

Baidu’s Android cloud technology strategy uses the Arm architecture as the underlying foundation and is divided into two stages to explore opportunities with the upstream and downstream ecosystem.

During the first stage, cloud mobile solutions and technologies based on Arm SoCs will gradually mature and become commercially available on a certain scale for near-term business opportunities.

In the second stage, as the deployment at scale of Arm-based servers matures, Baidu will actively support the development of Arm server chips, desktop-level GPU hardware solutions and software virtualization technology in cooperation with major Arm server chip manufacturers. This stage includes optimization for Android-native applications on the server side and delivers improved cost performance as a solid foundation for popular cloud-mobile and cloud-game applications.

“Arm-based servers deliver an optimized architecture and high performance for the delivery of Baidu’s cloud-based mobile platform services.”

– **Pengfei Shen**, Deputy General Manager  
Baidu Security Business Group

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## Benefits

- + Arm-based servers deliver an optimized architecture and high performance.
- + Arm-based architectures are best suited for popular mobile games and applications in the current Android app market.
- + Partners can take advantage of improved support tools and a wider range of open capabilities that allow customers to achieve high concurrency management.
- + Baidu enables enterprises to configure resources flexibly according to business needs and deploy customized services. Baidu “cloud mobile” helps ensure users never drop off, never lay-off, and never get hot.

## Wonderful Future of Android Cloud by Baidu and Arm

After the commercial use of the first global Arm server in 2013, Baidu has become an important partner in the Arm ecosystem, actively exploring the application of Arm-based servers. The application of cloud mobile expands the Arm platform from mobile consumption to server infrastructure. Baidu use cases for cloud mobile services include cloud gaming, playable ads, and smart displays. Now, Baidu is an active participant in the Arm ecosystem developing the foundation to support cloud mobile solutions and the growth of the industry.

## Cloud Gaming

The concept of cloud gaming has been gaining popularity for many years. With the maturity of network and hardware infrastructure, global industry giants have launched cloud game products in succession in the past two years.

With 4G networks, cloud games were able to run smoothly. With the arrival of 5G, the cloud game experience is elevated to next level. The increased bandwidth and low latency benefits of 5G adds significant improvement in the way the games are delivered and consumed. Games can be directly streamed from the cloud, eliminating the need for downloads and ultimately reducing the cost of customer acquisition for game developers.

At the same time, this model allows for low-and middle-end mobile phone users to run complex and compute intense mobile games smoothly, which greatly increases the range of users that can play cloud-based games.

Since the official launch of the Baidu cloud gaming platform in 2017, Baidu has distributed cloud games based on the traffic of its APP, running a total of 80 popular mobile games. It also has close collaborations with the “Duoku” and “Guopan” game platforms.





### Playable Ads

After years of development, the mobile advertising market has developed a mature model that combines information flow, video, and other ad schemes, with video advertising gradually becoming mainstream in the mobile game market. As the cost of customer acquisition through the playable ads mode increases, users can choose whether or not to download after experiencing the game content at a low cost. These interactive ads can greatly enhance the attraction of advertisements to users, which in turn helps stimulate growth for mobile advertising.

Domestic mainstream media continues to conduct research, development, and testing related to playable ads. According to Baidu's research, playable ads have significantly improved the corresponding data: advertising CTR (exposure-click) increased by up to 30 percent; advertising CVR (click-conversion) increased by up to 50 percent.

Since the Baidu Playable Ads Service's official launch in 2017, the company has conducted a significant number of technical R&D and launch tests based on many platforms such as information flow ads, interstitial, incentive video ads, and application store ads. Baidu has accumulated masses of data and experience, and has a unique plan to continually increase conversion rates.

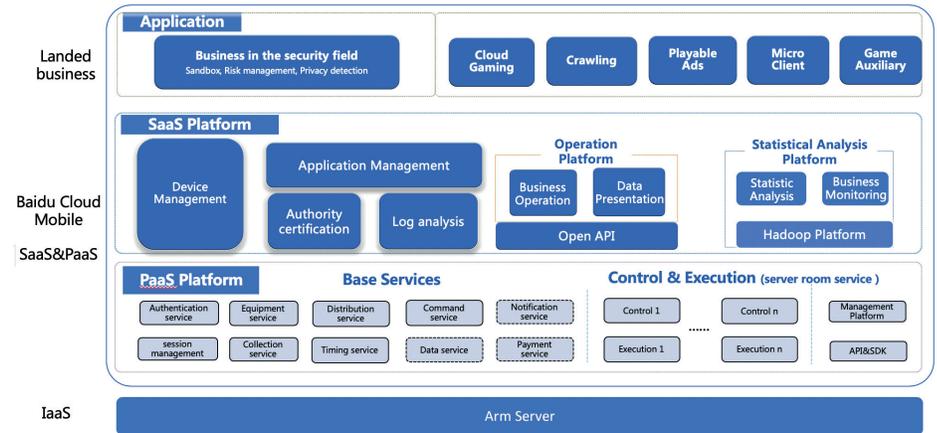
### Smart Speakers and Smart Displays

Over the last several years, smart speakers and smart displays have been a key consumer entertainment product, but have achieved limited adoption due to high product pricing and limited hardware performance. The cooperation between Baidu and "MiguPlay" brings cloud games into the smart display. Through the empowerment of Baidu "cloud mobile", the "XiaoDu" smart display delivers advanced AI-powered interaction capabilities so users can interface seamlessly with the device. The future "XiaoDu" will not only be a smart display, but also an Internet service portal with rich and powerful interactive functions. As a result, the "XiaoDu" smart display will continue its rapid growth in the first half of the year and still occupy first place in the smart display market, according to a recent report released by IDC (IDC Market Glance: Smart Home, 1Q2020).



## Technical Architecture

Baidu has invested in the expansion of Arm-based solutions for its strong cloud services business, and has developed a solid foundation for Android cloud innovation. Moving forward, Baidu plans to continue more in-depth exploration and innovation for the Android cloud service market based on Arm, and will also explore other use cases and growth opportunities.



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