2021 Development of China’s Basic Cloud Service Industry
Abstract

In 2020 the scale of China’s cloud service market hit **225.61 billion yuan**, setting a new record high. The Covid-19 pandemic has slowed down offline cloud businesses but has accelerated the companies’ application of cloud and has cultivated new business models and cloud usage habits, contributing to the further expansion of the public cloud market. In the context of the digital economy, the growing industrial Internet and the expanding industrial cloud bring potential incremental opportunities for the non-public cloud market.

From the perspective of **cloud users**, although the industrial Internet is still in an early stage, the enterprises’ understanding of cloud computing is improving and their cloud application has become more **refined**. From the perspective of **cloud companies**, the basic cloud market is becoming **more integrated** and the top players in the market have changed again. The competition among head cloud vendors has intensified. Both Internet cloud vendors and non-Internet cloud vendors keep working in the industry market according to company characteristics and technology features. Meanwhile, they actively expand product structure and develop cloud products of the capability type to gain continuous market competitiveness.

The **cloud application stages in different traditional industries vary** because of their different digital foundation. With the trend of electrification, networking, intelligence, and sharing, the **automobile industry** keeps upgrading its technical abilities, design concepts, and software and hardware products, and its connection with cloud vendors is closer. Companies in the **manufacturing** are pillars of the national economy. With the wide application of industrial Internet and industrial cloud platforms, the application of cloud will make breakthroughs.

When constructing ecology, different types of cloud vendors all develop both in the direction of **ecological chain** and the direction of **ecosystem**. Their strategies cover both the online **cloud market** and offline **cloud industry**. While improving their industry chain, they also expand business reach boundaries and achieve better integration of the real economy and digital economy through industrial cloud. Improve industry influence by the cluster effect of cloud industrial parks.
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</table>
Definition of Basic Cloud Services

Provide basic IT resources and software development resources based on cloud computing

**Basic Cloud Services**

**Cloud Management Platform (CMP)**

**Supporting PaaS**
- Container/mirroring
- Relational database
- NoSQL database
- Cloud communication
- Cloud video
- Message queue

**Innovative PaaS**
- Data calculation/analysis
- Data query/search
- Data warehouse/data lake
- Big data

**Hyper-convergence**
- Machine learning
- Speech technology
- Natural-language understanding
- Computer vision

**SDS**
- Cloud native
- Database

**SDN/SD-WAN**
- Serverless function compute
- Database

**Cloud Native**
- Cloud hosting/Virtual machine/Elastic computing
- High Performance Computing (HPC)

**Network**
- CDN and acceleration
- Server load balancer (SLB)
- Virtual private cloud (VPC)

**Storage**
- Object storage
- Tablestore
- Cloud block storage
- Block storage

**Computing**
- Bare metal

Note: 1. Due to the different angles of naming, in this report, the hierarchical relationship between the products does not strictly correspond to the position in the chart; cloud security is not included in the scope of this report due to the vague and complicated level division; 2. Supporting PaaS: PaaS products that emphasize resource utilization, more efficient integration, configuration, and scheduling of basic IT resources, and improving business capabilities; Innovative PaaS: PaaS products that highlight technological innovation, rely on basic resources, provide opportunities for business innovation/expansion, and bring profound changes to product development.

Source: iResearch Consulting Group.
Size and Structure of China’s Basic Cloud Service Market (1/2)

The cloud market grows steadily and factors driving the market may change

In 2020 the scale of China’s cloud service market hit 225.61 billion yuan, setting a new record high. The growth rate reached about 40%. Since most offline businesses were hindered because of the Covid-19 pandemic, many cloud projects with a long construction period were postponed, delaying the further development of the cloud market. However, demand for online entertainment and working from home has increased significantly, driving the demand for clouds in the pan-Internet industry, resulting in the growth of the public cloud market. Meanwhile, the accelerated cloud application will increase the market’s demand for cloud resources, driving the growth of the market share of IaaS. The changed idea about using cloud and the focus on capabilities will promote the development of PaaS and will become the main driver for the cloud market.

Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
Covid-19 pandemic promotes the expansion of the public cloud market. Construction of industry cloud drives the growth of the non-public cloud market

- The outbreak of the Covid-19 pandemic has promoted the development of the cloud computing industry, accelerated the application of the cloud among enterprises, and driven the size of the public cloud market to reach 150 billion yuan in 2020. In the post-pandemic era, the cloud usage habits and the demand for cloud that accumulated during the pandemic will further stimulate the growth of the public cloud market.
- With the development of the industrial Internet, the application process in various industries is sped up, and the model of 'industry + cloud service' spreads quickly. Due to policies, security needs, and industry characteristics, most industries have chosen the model of multiple clouds, promoting the further expansion of the non-public cloud market.

Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
China’s Basic Cloud Service Industry Chain

CDN
Telecom operators
Basic IT Hardware
IDC

SDN SD-WAN
Hyper-convergence

Comprehensive cloud vendors
- Internet cloud vendors
- Traditional IT cloud vendors
- Cloud vendors from a basic IT background
- Cloud vendors from an overseas background

Non-public cloud vendors
- Proprietary cloud/Exclusive cloud
- True private cloud/Next generation of private cloud
- Managed cloud
- Private cloud

Supporting PaaS
- Cloud native
- Database
- Innovative PaaS
  - AI
  - Big data
- CMP

Client
SI
MSP
SaaS/ISV
Agency
Client

Source: iResearch Consulting Group.
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China’s Basic Cloud Service Industry Chain

IDC

Supporting PaaS (container)
- BoCloud
- Caicloud
- Cloudo.cn
- Rancher
- DaoCloud
- Softcloud
- Timesky
- Tpucloud
- Tucucloud
- Xcloud
- Zcloudcloud

Innovative PaaS (AI)
- Iflytek
- MEGVII

CMP
- CloudCheer
- Zuci

Comprehensive cloud vendors
- 阿里云
- 亚马逊云科技
- 百度智能云
- 金山云
- 华为云
- Microsoft Azure
- 腾讯云
- 京东云

Non-public cloud vendors
- Huawei Cloud
- 奇点云
- 九洲云
- 育学网络
- QINGCLOUD
- ZStack
- 汇云捷讯
- 网宿科技
- EasyStack

SND/SD-WAN
- YunShan
- zenlayer
- H3C
- AgotoZ
- ZTE中兴
- Huawei
- CertusNet

Hyper-convergence
- smartx
- H3C
- Huawei
- Lenovo
- ZettaKitt
- QINGCLOUD
- SANGFOR

SDS
- Huawei
- SanDisk
- Sugon
- SKY

IDC
- China Telecom
- China Mobile
- DATA博士数据
- 世纪互联

CDN
- Cloudflare
- ChinaCache
- Qiniu
- 乐云
- 网宿科技
- 阿里云

Source: iResearch Consulting Group.
The Competitive Landscape of China's Basic Cloud Service Market

Top players in the market have changed again.

The top 3 players in China’s IaaS public cloud market have changed again. Alibaba Cloud and Tencent Cloud remain the top two. With its high growth rate, Huawei Cloud rose to the third. The structure of China’s IaaS+PaaS public market is relatively stable. The head vendors in the IaaS public cloud market are also leading companies in the field of IaaS+PaaS. Internet cloud vendors are still dominating the market, but vendors from an IT background are growing fast. Companies that use the cloud gradually focus on improving cloud capabilities. By continuous investment in the PaaS area, the comprehensive cloud vendors with advantages in the database, big data, AI, and other typical PaaS areas gain market shares through first-mover advantages and gain differentiated advantages based on technical capabilities.

2020 Ranking and Shares of Enterprises in the IaaS Public Cloud Market in Domestic China

- Alibaba Cloud: 38.5%
- Tencent Cloud: 12.7%
- Huawei Cloud: 11.1%
- E Cloud: 12.7%
- Amazon Web Services: 2.5%
- Kingsoft Cloud: 2.1%
- Baidu AI Cloud: 4.1%
- Inspur: 5.1%
- JD Cloud: 9.0%
- UCloud: 1.1%
- Others: 3.3%

2020 Ranking and Shares of Enterprises in the IaaS+PaaS Public Cloud Market in Domestic China

- Alibaba Cloud: 38.7%
- Tencent Cloud: 12.6%
- Huawei Cloud: 10.5%
- E Cloud: 8.0%
- Amazon Web Services: 6.0%
- Kingsoft Cloud: 3.8%
- Baidu AI Cloud: 2.3%
- Inspur: 2.3%
- JD Cloud: 1.1%
- Azure: 3.7%
- Others: 6.0%

Note: 1. The ranking only includes comprehensive cloud vendors; 2. Please refer to the appendix for the specific caliber.
Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
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Development Environment for the Basic Cloud Service Industry (1/2)

Application of industry cloud is still in the early stage and the industrial Internet has huge potential

In the context of the digital economy, the Internet industry has received wide attention. Judging from the composition of national economic income, traditional industries are still the pillars. With the gradual integration of the Internet industries and traditional industries, the development of the industrial Internet will generate huge market space. New business scenarios and business models will also contribute to the application and upgrade of cloud computing in more fields. However, since the digital foundations of different industries vary, there are differences in the development of the industrial Internet. The digitalization of most traditional industries is still at an early stage. The average industrial Internet index of China's seven representative industries is 17.0. The financial, retail, and entertainment industries are above average. But the digital levels of manufacturing, which is the dominant one in the secondary industry, and healthcare and education which are closely related to people's daily life, remain to be improved.

### 2019 Contribution of the Seven Major Traditional Industries to China's National Economy

<table>
<thead>
<tr>
<th>Industry</th>
<th>Contribution</th>
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</thead>
<tbody>
<tr>
<td>Secondary industry</td>
<td>81.9%</td>
</tr>
<tr>
<td>Tertiary industry</td>
<td>17.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Industry</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finance</td>
<td>5.50</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>11.20</td>
</tr>
<tr>
<td>Logistics</td>
<td>21.50</td>
</tr>
<tr>
<td>Retail</td>
<td>19.50</td>
</tr>
<tr>
<td>Entertainment</td>
<td>16.10</td>
</tr>
<tr>
<td>Education</td>
<td>15.60</td>
</tr>
<tr>
<td>Healthcare</td>
<td>15.60</td>
</tr>
</tbody>
</table>

Average index 17.0

Source: The data are based on the 2019 National Economic Income released by the National Bureau of Statistics. The research and chart are done by iResearch independently.

Source: 'iResearch: 2019-2020 China Industrial Internet Index Report', The research and chart are done by iResearch independently.
Development Environment for the Basic Cloud Service Industry (2/2)

The Covid-19 pandemic brought new opportunities and saved the cloud industry.

The industrial Internet has been the focus of the cloud computing industry since 2020. However, cloud application among industries was forced to slow down because of the Covid-19 pandemic. The traditional industries have been affected to varying degrees during the outbreak. Judging from the average index change of the added value (cumulative value) of various industries, commercial entities engaged in offline businesses were hit hard. However, the information technology industry represented by cloud computing had an impressive performance during the outbreak, with an average growth rate of 12.1% in the first half of 2020. As the pandemic is gradually under control, the industries are speeding up the resumption of work and production. Industry cloud application is again in full swing. The increasing demand for online education, online office, Internet audios and videos, short videos, and games during the pandemic has accelerated the promotion of cloud computing and increased the usage of cloud. In the post-pandemic era, cloud vendors need to figure out how to keep new business habits and better meet the demand for cloud resulted from richer business needs after the pandemic.

Average Index Change of Industry Added Value of (cumulative value) in H1 and H2 2020
Cloud Clients

With the development of industrial Internet, cloud users gradually focus on refined cloud application

With the development of the digital economy, the main factor driving the development of Internet industries gradually changes from consumer Internet to industrial Internet. Industrial Internet gradually penetrates into the development of traditional industries. Various vertical industries reorganize their internal value chains by introducing digital and intelligent tools. While reorganizing the value chains, the differences in the digital foundation and industry characteristics of different industries guide the companies to match cloud computing capabilities with industry characteristics and to combine cloud service selection with enterprise characteristics.

**Cloud computing Development Characteristics and Demands in Different Industries**

- **Internet**
  - Due to the business needs of the leading Internet vendors, the ability to reduce costs and increase efficiency by using external cloud computing has lowered. Self-built cloud services are more and more widely adopted.

- **Government affairs**
  - Government affairs cloud construction is going well. With policy support, the proportion of governments using cloud has increased significantly, but they mainly use cloud for resources. The development of cloud computing will attach more importance to the collaborative development of more government affairs fields, and the comprehensive construction in the aspects such as smart transportation and smart city.

- **Healthcare**
  - With policy support, more and more hospitals have adopted clouds and have gradually adopted digital tools such as electronic medical records and AI diagnoses. The future development of healthcare will be more focused on using digital methods to realize precision medicine and integration of hospitals’ internal data and the pan-health industry, gathering information from hospitals, drugstores, and healthcare platforms.

- **Education**
  - The construction of the digital campus is surging and the application of the cloud in the field of scientific research and higher education has increased significantly. However, the education industry is still focusing on general cloud capabilities. Cloud functions are mainly used in school resource management, and the students’ experience needs to be taken into consideration.

- **Manufacturing**
  - Because of the weak digitalization foundation, the application of cloud is carried out slowly. Cloud businesses need to coordinate multiple cloud computing resources and take multiple capabilities such as the cloud side into account. Meanwhile, the cloud products need to cover all aspects of the industry and integrate ecology and the partners’ ability. Industrial Internet, industrial cloud platform, digital factory, etc. will be key construction scenarios.

- **Finance**
  - With high regulatory requirements, cloud computing products need to have a high security level and better protection of user privacy and data security. While guaranteeing account security, it is necessary to have a complete disaster tolerance plan.

Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
Cloud Vendors

Cloud vendors gain differentiated advantages and improve the ecological system.

Different types of cloud vendors use their advantages to gain differentiated advantages in the aspects of products, technology, and business models. With huge traffic and plenty of clients, the cloud vendors from an Internet background focus on using their PaaS abilities (Big data, AI) to reach business clients. They also help their customers plan future digital business scenarios, make cloud service plans. They also use the help from partners to improve their customer services and hardware product integration. Those not from an Internet background use their advantages from a commercial background, and gradually add cloud services in clients’ business scenarios, thanks to their industry understanding and customer relationship accumulated in traditional industries. They also increase investment to improve software abilities and introduce ecological partners. When serving customers, they give priority to solving their core digital pain points, expand and upgrade the scope of cloud services, and gradually promote cloud services.

Source: Public information, iResearch Consulting Group.

Types and Characteristics of Major Comprehensive Cloud Service Vendors in China

Cloud vendors from an Internet background
- Outstanding advantages in software capabilities and cloud products (big data, AI) and other fields

Cloud vendors from an ICT background
- They have strong ICT infrastructure support and can better provide industry clients with full-stack general and stable services

Cloud vendors from an overseas background
- They have advanced technical understanding and cloud products that are used at home and abroad. Help companies balance the demand for cloud in China and foreign countries.

Development Models of Major Comprehensive Cloud Service Vendors in China

Cloud services
- PaaS development resources
- IaaS basic resources

Cloud deployment
- Public cloud sector
- Non-public cloud sector

Many Application Scenarios
- Government affairs
- Healthcare
- Finance
- Industry
- Education
- Game
- Video

Source: iResearch Consulting Group.
Cloud products

Resource products account for the main part and capability products have room for growth.

From the perspective of product revenue, resource products are still the main part of the cloud computing product structure. Revenue from computing, network (including CDN), and storage account for 75.1% of the total revenue of Chinese cloud vendors. The revenue from PaaS products just accounts for a little more than 20%. With the change of focus of enterprise cloud application, cloud vendors are now actively preparing for potential hot tracks. Taking the investment and financing structure of the basic cloud field into consideration, the investment focuses in this field in 2020 were PaaS platform products and cloud platform tools of various industries. The investment and financing structure shows that cloud vendors gradually improve their industry cloud product ecology by investment, and the capability products have gradually become a focus of enterprise cloud application. Data products, such as data platforms and data analysis tools, have become a major part of industries’ digital transformation.

Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
Cloud in Overseas Markets

Chinese and foreign cloud vendors have different strategies for serving overseas development of enterprises

The vendors in the global delivery market of China's IaaS+PaaS public cloud are mainly Internet vendors, foreign vendors, and vendors from an IT background. Among them, the comprehensive cloud vendors from China mainly gain revenues from overseas markets in two methods. 1) Provide supporting cloud resources and cloud capabilities for the overseas IT infrastructure construction of Chinese-funded enterprises; 2) Serve the international branches of Chinese companies and provide cloud technical support for the business promotion needs of the Internet/audios and videos/entertainment/games, etc. With advantages in background and capabilities, the overseas vendors represented by Amazon Web Services rely on their globally distributed infrastructure and a deep understanding of cloud business-related security and compliance requirements in different regions to provide extensive support for Chinese companies in their overseas development.

2020 Ranking and Shares of China's IaaS Public Cloud Global Delivery Market (Including Overseas Business)

- Alibaba Cloud: 36.7%
- Amazon Web Services: 10.8%
- Tencent Cloud: 12.6%
- Huawei Cloud: 26.0%
- Baidu AI Cloud: 10.8%
- Other: 3.8%

2020 Ranking and Shares of China's IaaS+PaaS Public Cloud Global Delivery Market (Including Overseas Business)

- Alibaba Cloud: 39.2%
- Amazon Web Services: 10.9%
- Tencent Cloud: 10.9%
- Huawei Cloud: 13.1%
- Baidu AI Cloud: 13.1%
- Others: 23.3%

Note: 1. The ranking only includes comprehensive cloud vendors; 2. Please refer to the appendix for the specific caliber.
Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
Cloud Scenarios (1/2)

Contribute to the electrification, networking, intelligence, and sharing. Enrich the scenarios of the automobile industry

Software application accounts for an increasing proportion of investment in automobiles. With the over the air technology maturing, automotive electronics and electrical architecture gradually decouple the hardware and software of cars and promote the popularization of software-defined vehicles in the automobile industry, resulting in a shorter and more frequent upgrade cycle of intelligent software equipment. The carmakers need to have more reliable cloud capabilities to support the quickly expanding application. Meanwhile, the electrification, networking, intelligence, and sharing trends of the automobile industry are promoting deeper cooperation between carmakers and cloud vendors. More and more carmakers find that the introduction of top-level digital applications alone cannot essentially improve the digital capabilities of enterprises. They need to build complete basic cloud facilities to better empower the application scenarios, thereby using cloud computing resources and abilities to solve pain points in the scenarios.

Factors Driving the Development of Internet of Vehicles

**Improvement of over the air technology**
Wireless management and upgrade of automotive equipment and data through mobile communication interfaces can ensure the flexible iteration of automotive system technology, helping to change cars from simple vehicles to smart mobile terminals.

**Improvement of automotive electronics architecture**
The distributed architecture is gradually applied, and the automobile hardware architecture, software architecture, and communication architecture are continuously decoupled and layered. Therefore, without changing the hardware system, the vehicle’s software capabilities and operating systems can be upgraded through software updates.

**Penetration into service architecture**
The upgrade of transmission technology and the decoupling of software and hardware have gradually promoted software-defined vehicles, which has changed the concept of automobile manufacturing and the design in the basic layer and has created a platform that aggregates software and functions more suitable for smart cars.

Pain Points and Demand for Cloud in Main Scenarios of the Automobile Industry

- **Autopilot**
  A very large amount of vehicle testing data. Difficult data collection, transmission, and management. High requirements of simulation testing and model training for the flexible scalability of cloud computing. Autonomous driving models’ difficult development and high requirement for machine learning models.

- **Digital marketing**
  Isolated data islands in carmakers and car stores. The negative influence of poor communication on customer experience. Lack of data analysis and intelligent management abilities. A waste of resources caused by the mismatch between marketing methods and customer portrait.

- **Car simulation**
  Independent deployment by enterprises, high capital investment cost, fast asset impairment and update, long construction period, and high operation and maintenance costs, difficulty in meeting fast-changing business needs.

- **Smart travel**
  Online car-hailing has rich scenarios and is difficult to regulate. It is very hard to supervise or manage the behaviors of both drivers and passengers. The problems also include low intelligent level, untimely vehicle scheduling and management, inaccurate loss assessment, and high operating costs.

Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
Cloud Scenario (2/2)

Upgrade industrial cloud platforms and empower the industrial Internet

Since industrial manufacturing is a pillar of the traditional industries, its cloud application will affect the overall digitalization process of the secondary industry. According to the Action Plan for Innovative Development of the Industrial Internet (2021-2023), the number of industrial enterprises and equipment that use the cloud in 2023 will be twice as large as that in 2020. Therefore, the industrial manufacturing enterprises cooperate with cloud vendors to increase application scenarios of industrial cloud platforms and customize solutions targeting pain points in the scenarios of the industrial Internet implementation. While emphasizing penetration rate, the construction of industrial cloud platforms and industrial Internet attach more importance to the construction quality and system improvement. The construction of the underlying infrastructure should collaborate the cloud and network, increase the scale of nodes, and improve the service quality. In the field of functional platforms, more emphasis is placed on the integration of big data and AI means and the digital tools' support for business innovation, increasing the breadth and the depth of the overall industrial Internet at the same time.

2020 Industrial Internet Development and Application Index of Various Industries in China

<table>
<thead>
<tr>
<th>Industry</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>69.64</td>
</tr>
<tr>
<td>Wholesale and retail</td>
<td>44.59</td>
</tr>
<tr>
<td>Information transmission, software, and IT service industry</td>
<td>44.1</td>
</tr>
<tr>
<td>Scientific research and technical service</td>
<td>35.43</td>
</tr>
<tr>
<td>Leasing and commercial service</td>
<td>30.79</td>
</tr>
<tr>
<td>Construction</td>
<td>28.06</td>
</tr>
<tr>
<td>Finance</td>
<td>23.73</td>
</tr>
<tr>
<td>Transportation, warehousing, and postal</td>
<td>19.36</td>
</tr>
<tr>
<td>Electricity, manpower, gas and water production and supply</td>
<td>18.8</td>
</tr>
<tr>
<td>Accommodation and catering</td>
<td>18.42</td>
</tr>
<tr>
<td>Real estate</td>
<td>18.21</td>
</tr>
<tr>
<td>Water conservancy, environment, and public facilities management</td>
<td>17.8</td>
</tr>
<tr>
<td>Culture, sports, and entertainment</td>
<td>15.96</td>
</tr>
<tr>
<td>Resident services, repair and other services</td>
<td>15.46</td>
</tr>
<tr>
<td>Mining</td>
<td>12.6</td>
</tr>
<tr>
<td>Agriculture, forestry, animal husbandry, and fishery</td>
<td>6.96</td>
</tr>
<tr>
<td>Health and social work</td>
<td>6.11</td>
</tr>
<tr>
<td>Education</td>
<td>4.94</td>
</tr>
<tr>
<td>Public administration, social security, and social organization</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Main Industrial Manufacturing Scenarios’ Pain Points and Demand for Cloud

- **Isolated data island**
  - Rich business scenarios, diverse data types, and isolated data islands exist in various departments; problems in data collection, sorting, storage, and management; weak data analysis and visualization capabilities

- **Slow transformation and weak foundation**
  - Weak digital foundation, low current ICT infrastructure capabilities and shortage of basic resources; low expansion degree by using the existing infrastructure to support the platform and applications

- **Multiple types of terminals need to be coordinated**
  - Widely distributed businesses of enterprises, covering a variety of terminal equipment; difficulties in collaborative management of equipment and management of cloud computing, edge computing, and terminal systems, due to different equipment systems and platforms

- **Professionals need to be accumulated**
  - Conservative corporate management thinking and operating model; lack of digital equipment and digital talents; greater lack of compound talents with digital capabilities that understand industry characteristics

Source: ‘White Paper on Industrial Internet Development and Application Index (2020)’. The research and chart are done independently by iResearch.

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Cloud Ecology (1/2)

Rely on partners to expand business boundaries and build a diverse cloud market

The ecological construction of cloud vendors mainly rely on the ecological chain and the ecosystem. The vertical ecological construction idea focuses on complementing all links of the industry chain and the cooperation with partners to cover customer reach, product deployment, implementation, delivery, maintenance and other links. According to the hierarchical characteristics of the Internet, The horizontal idea gives full play to the base functions of cloud computing, keep empowering development platforms and many types of industrial applications, and form solutions or resource pool to provide better services for the business scenarios and pain points of clients in different industries.

Types and Functions of Cloud Vendors’ Main Partners

Channel partners
Able to provide cloud product consulting, sales, and services and can guide customers to buy cloud products on cloud vendor platforms. Sell cloud products authorized by cloud vendors to customers through its own channels.

Service partners
Have the ability to deliver products or services needed by cloud vendors, and provide clients with services such as design, construction, migration, management, training, security, consulting, operation and maintenance.

Product and solution partners
They have their own software and hardware products or cooperate with cloud vendors to develop and deploy software products and development platforms and other technologies and solutions based on vendor cloud platforms/integrated with cloud platforms.

Cloud market partners
According to the software needs of individuals, SMEs, and large enterprises, the products are listed on the trading platforms provided by the cloud vendors and are supervised by the cloud vendors.

Types of Products Provided in China’s Cloud Market in 2021

- Website build and promotion: 18.8%
- Professional service: 17.3%
- Enterprise application: 14.9%
- AI + big data: 11.9%
- Basic software: 9.9%
- Mini program: 9.5%
- Security service: 9.2%
- Internet of Things: 9.2%
- API: 9.1%
- Other: 3.3%
- API: 2.6%
- Other: 2.5%

Source: Based on public information, the research and chart are done by iResearch independently.
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Source: iResearch Consulting Group.
Build cloud park, create cloud industrial cluster and incubate new growth drivers for the industry

While focusing on online businesses, cloud vendors also actively use their influence to make offline layouts in the process of ecological construction. With industrial Internet, they cooperate with local governments to better combine the resource aggregation effect of cloud computing with local characteristics, thereby connecting local real economy and digital economy. The cloud computing parks are mainly located in the economically developed Yangtze River Delta and Pearl River Delta regions. With the change of economic development strategies, more parks will be built in the Midwest area. The comprehensive cloud vendors provide a variety of parks, aiming to attract various types of enterprises to improve ecological construction and expand industry influence.

### 2021 Distribution of Cloud Computing Parks in China

<table>
<thead>
<tr>
<th>Types and Functions of Cloud Computing Parks</th>
<th>Description</th>
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<tbody>
<tr>
<td>Industrial park</td>
<td>Cooperate with local governments and use cloud computing as the resource and capability foundation to gather multiple types of mature enterprises. Provide a platform for local digital transformation and digital capability improvement to integrate the real economy and the digital economy.</td>
</tr>
<tr>
<td>Incubator</td>
<td>Provide start-ups with office space and subsidies according to local policies. Provide comprehensive training courses or training camps for companies that lack experience, so that they can have a good business environment and can focus on core business</td>
</tr>
<tr>
<td>Accelerator</td>
<td>Use cloud vendors’ advantages to provide necessary technical support. Help companies access customer resources and financial resources to achieve rapid growth. Take the development plans of cloud vendors into consideration to set up special acceleration projects such as AI and cloud native</td>
</tr>
<tr>
<td>Innovation center</td>
<td>A highly integrated compound park has multiple functions, undertakes multiple tasks, and has more diverse and flexible models.</td>
</tr>
</tbody>
</table>

Note: based on the distribution and types of industrial parks of the top integrated cloud vendors in the basic cloud field
Source: iResearch Consulting Group.

Source: The data are based on public information and interviews with corporates. The research and chart are done by iResearch independently.
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Appendix
Alibaba Cloud

The development strategy is upgraded again to improve the service ability of governments and enterprises.

With the deepening of the industrial Internet, the development of the digital economy started. ‘Digital economy service provider’ is now a new label and positioning of Alibaba Cloud. Providing good services has become its strategic basis, showing that Alibaba Cloud has begun to rely on an excellent digital service team to maintain the trust of customers while keep providing high-quality technology and acquiring customers with technology. The new strategy leads to new products and industry solution upgrades. Taking Alibaba Cloud’s digital factory solution as an example, during the pandemic, Alibaba Cloud gained industry customer recognition by building digital factories to help companies quickly resume work and production. In the post-pandemic era, with keen industry insight, Alibaba Cloud combines universal digital factory capabilities and industry characteristics to release the automobile industry Digital Factory 1.0, which contributes to the improvement of carmakers' automation and intelligence level, helps carmakers find the value of data, and uses data intelligence to achieve digital transformation.

Source: iResearch Consulting Group.
Alibaba Cloud

Deepen the integration of cloud and DingTalk, gather industry partners and empower a wide range of business scenarios

Alibaba Cloud emphasizes the importance of integrated cloud and DingTalk to the realization of Alibaba Cloud’s strategy about government and enterprises. Starting from Alibaba Cloud’s defining DingTalk as an operating system and an open platform, the strategy of integrating cloud and DingTalk has been adjusted and improved with the development of Alibaba Cloud, continuously expanding the application scope of DingTalk. The integration of cloud and DingTalk constantly updated technical tools of Alibaba Cloud and cooperates with industry partners to find solutions jointly. While keeping DingTalk agile and easy to use, the advantages of partners are better integrated. Currently, DingTalk keeps opening its underlying platform and integrates more low-code ecological products to help companies innovate businesses faster. Therefore, the integration of cloud and DingTalk becomes an effective tool for helping Alibaba Cloud to explore the government and enterprise market and is the key to aggregate underlying resources and linking ecological partners.

Source: iResearch Consulting Group.
Tencent Cloud

Rely on a solid foundation to serve rich scenarios and link multiple partners to create a win-win ecosystem

Tencent Cloud is a cloud computing brand of Tencent Group that provides cloud computing, big data, AI, and other technology products and services for both personal developers and companies of different sizes and from different backgrounds. It relies on technological capabilities to create rich industry solutions and builds an open and win-win cloud ecosystem that promotes the construction of industrial Internet and digital upgrades in various industries. Tencent Cloud now provides millions of servers and close to EB-level data storage, and basic cloud capabilities to support rich application scenarios. Meanwhile, it relies on diverse partners to provide customers with ecological support that can meet needs in multiple types of business scenarios.

Tencent Cloud product system and advantages

Source: iResearch Consulting Group.
Tencent Cloud

Aggregate superior resources, customize solutions and empower industry digitalization

With the development of the industrial Internet, Tencent Cloud combines its profound industry understanding with its experience in the Internet industries and industry features. It also cooperates with partners to produce customized solutions that cover many industries such as government affairs, energy, education, healthcare, e-commerce, and manufacturing. For example, the financial industry solutions provided by Tencent Cloud cover insurance, banks, securities, pan-finance, and include multiple types of cloud deployments such as public cloud and proprietary cloud. According to regulatory requirements and business standards of the financial industry, Tencent Cloud’s financial solutions can effectively meet the demand for disaster recovery backup and quick repair failures. The seven security joint laboratories of Tencent can guarantee data security as well as prevent other potential risks.

Source: iResearch Consulting Group.
Amazon Web Services

Amazon Web Services has three drivers, emphasizes the development in China and empowers innovation
China is among the most important countries in the global layout of Amazon Web Services. Amazon Web Services has a long-term commitment to the development of businesses in China. In March 2021 it released its China business strategy that contains three main drivers. 1) Provide Chinese clients that use the China region (Sinnet operates the Beijing region and NWCD operates the Ningxia region) with world-leading cloud technologies and services to assist the further development of their local businesses; 2) Help global customers in overseas markets to maintain the consistency of global IT architecture and experience by using the Chinese region; 3) Help Chinese clients to enter overseas markets through its global infrastructure and services. These three drivers will cooperate, promote and integrate with each other to provide comprehensive services for the business reshaping and digital innovation of clients at home and abroad. Recently, to promote the implementation of the strategy, Amazon Web Services has announced three latest business developments: 1) The Ningxia region has started the second expansion phase. The newly added area of plant facilities and supportable calculated capacity is expected to be 1.3 times as large as the first phase. 2) The Beijing region has officially announced the third available zone, providing clients with more reliable, more flexible, and more useful infrastructure services. 3) Amazon Web Services will provide free cloud computing technology training for 29 million people by 2025, and China will play an active role in it.

The Advantages and Development Strategy of Amazon Web Services

- **Advantages**
  - Continuous and efficient product development and update
  - Complete and convenient global network and facilities
  - Strictly compliant security and privacy
  - Healthy and perfect partner ecology

- **Development strategy**
  - **Empower digitization and activate the "inner loop"**
    - **Chinese customers in the Chinese market**
      - Provide global leading cloud technology and services for Chinese customers deeply rooted in China, so they can develop local businesses better
  - **Contribute to globalization and promote the "outer loop"**
    - **Overseas customers rooted in China**
      - Help global customers in overseas markets to maintain the consistency of global IT architecture and experience by using the Chinese region
    - **Successful overseas development of Chinese customers**
      - Help Chinese clients to enter overseas markets through the global infrastructure and services of Amazon Web Services

**Empower partner ecology**
- Consulting partners
- Technology partners
- Amazon Web Services Marketplace

**Deepen Industry solution**
- Automotive
- Education
- Energy
- Finance
- Game
- Manufacturing
- Advertising
- Healthcare
- Retail
- ……

Source: The research and chart are done by iResearch independently.
Continue to investment in China and accelerate technology application to provide safe and efficient cloud services

In China, the Ningxia region operated by NWCD and the Beijing region operated by SINNET provide clients with comprehensive technologies and services that comply with Chinese laws and regulations. Amazon Web Services has been developing in China for a long time. It continuously increase investment and now provides 101 services in China through cooperating with SINNET and NWCD. Now the implementation of new services in China takes less time. For example, the seven new functions of Amazon SageMaker released in 2020 had all been launched in China by March 2021. Amazon Web Services released cloud instance based on the Graviton2, the second-generation server processor chip. The chip is based on ARM architecture and can improve cost performance by up to 40%. Amazon Container Service Anywhere (Amazon ECS Anywhere) launched in May in China helps clients use standardized container orchestration to run the local environment and applications on the cloud to achieve simple and consistent management experience, reduce operation and maintenance costs and focus on business innovation. The control layer of the Amazon Web Services region is in charge of local container management and deployment, which can enhance enterprise operation efficiency. In the area of data analysis, Amazon Web Services has been promoting ‘Lake House’: Based on a safe, reliable, and flexibly expandable data lake, this structure uses dedicated data analysis tools for unified management, removes mobile data barriers, deeply integrates the machine learning ability, helps companies release the value of data, and accelerates transformation driven by data.

Main Product System of Amazon Web Services

Source: The research and chart are done by iResearch independently.

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Appendix
Appendix-Market Share Statistics (1/2)

The caliber of ‘China’s Public Cloud IaaS Market Share’ in this report is listed below:

➢ **Product scope**: General computing, storage, network resources and services based on cloud/virtualization provided by basic cloud service vendors for their clients.
   Including——
   1) Computing services: Virtual Machine, Elastic Computing, Cloud hosting, bare metal service, GPU cloud virtual machine, FPGA cloud virtual machine, high performance computing
   2) Storage service: Object storage, file storage, block storage, tablestore, cloud block storage
   3) Network services: Broadband, CDN and acceleration, load balancing, gateway, VPN

➢ **Deployment model**: Cloud service infrastructure is owned and controlled by cloud service vendors, and the resources are open to all customers for sharing.

➢ **Time range**: Calendar year 2020

➢ **Geographical scope**:
   Domestic market: The manufacturer’s operating income in the Chinese mainland market (that is, excluding Hong Kong, Macao and Taiwan markets) with the caliber mentioned above. The contract is signed in mainland China by enterprise legal person / governments / public institutions in mainland China. The delivery location can be located in Mainland China.
   Overseas market: The operating income of manufacturers outside the Chinese mainland market (including Hong Kong, Macao, and Taiwan markets), with the caliber mentioned above. The contract is signed in mainland China or overseas by enterprise legal persons / governments / public institutions in mainland China. The delivery place can be located outside of Mainland China.

Source: iResearch Consulting Group.
Appendix - Market Share Statistics (2/2)

The caliber of ‘China’s Public Cloud PaaS Market Share’ in this report is listed below:

- **Product scope**: Application development tools, development technology, development platforms, and development environment based on cloud provided by cloud service vendors.
  Including——
  1) Database: Relational database: Support/ be compatible with MySQL, SQLServer, PostgreSQL database products/database management tools
     NoSQL database: Database products/database management tools that support/are compatible with MongoDB, Redis, Memcache
  2) Big data: Big data calculation/analysis products and streaming data calculation/analysis products that Support/are compatible with MapReduce and its ecology, data query/search, data warehouse/data lake
  3) AI: Machine learning, speech technologies (speech recognition, speech synthesis, speech detection), Computer vision(facial recognition, body recognition, character recognition, image recognition/search, content review/security ,Natural-language understanding (machine translation, knowledge graph)
     4) Cloud native: Container service (instance/mirror/orchestration/management), DevOps, micro service, Serverless (Function calculation)
  5) Cloud video: Cloud livestreaming, cloud video on-demand, real-time audio and video, video processing
  6) Cloud communication: Instant messaging, short message service, voice service
  7) Other development tools: Message queue

- **Deployment model**: Cloud service infrastructure is owned and controlled by cloud service vendors, and the resources are open to all customers for sharing.

- **Time range**: Calendar year 2020

- **Geographical scope**:
  Domestic market: The manufacturer's operating income in the Chinese mainland market (that is, excluding Hong Kong, Macao and Taiwan markets) with the caliber mentioned above. The contract is signed in mainland China by enterprise legal person/governments/public institutions in mainland China. The delivery location can be located in Mainland China.
  Overseas market: The operating income of manufacturers outside the Chinese mainland market (including Hong Kong, Macao, and Taiwan markets), with the caliber mentioned above. The contract is signed in mainland China or overseas by enterprise legal persons/governments/public institutions in mainland China. The delivery place can be located outside of Mainland China.

Source: iResearch Consulting Group.
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Founded in 2002, iResearch is the first third-party firm focusing on research in China’s internet sector. Since its inception, it has published thousands of industry reports and provided custom research and consulting services to thousands of clients. It is now the preferred third-party research brand for the IPO of Chinese internet companies. iResearch set up its global research center in 2015, expanding the scope of research to fast-growing sectors world-wide.

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