

Tech Behind the Scenes: Double 11 Special Edition



Alibaba Cloud

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Alibaba Cloud

Special Issue

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Words from the Chief Editor

The technologies behind the double 11 shopping festival

As the Post-Covid19 Era is coming, we have found more and more traditional enterprises have more integrated models combining the Offline and Online together. The consumers can order either in the online stores or go shopping in the offline stores, more convenient for the end-users

But how to support the converged business models, and how to support more enterprises have their success in such tough period, we would like to share our business practices for your reference.



This year the double 11 shopping festival has been supported by Alibaba Cloud. In 2019, 100% core business system running on Alibaba Cloud. In 2020, the core business system is fully cloud-native, large scale application delivery efficiency enhanced by 100%. Big data platform handles largest data, Flink consume stream data up to 4 billion per second during peak time. Cloud native database PolarDB's read/write performance is 50% higher than last year.

Actually, for the big shopping festival, the most challenge is how to smoothly handle the peak time volume, and how to handle the E2E transactions in the seconds and so on.

As the technology has been always empowering and supporting the business innovation and success, we would like to reveal the technologies that we have deployed in the double 11 shopping festival, the scalability, security, resilience, elasticity that have been strongly reflected in the business practice.

Hope our sharing will be helpful.

The business keeps innovative and the technologies keeps supporting the business success.

Selina Yuan
President of
Alibaba Cloud Intelligence
International Business

A stylized, handwritten signature in black ink that reads "Selina".

Cover Story



By Stephanie Gao

Alibaba's cutting-edge AI, cloud and data center innovations made the 2020 11.11 Global Shopping Festival a success, with a record \$74.1 billion in gross merchandise volume, and 800 million consumers placed 2.32 billion delivery orders on Alibaba's retail marketplaces, Tmall, Taobao, Kaola, Lazada, AliExpress. Alibaba Cloud saw orders hitting 583,000 per second at its peak, 1,400 times the peak volume seen via the same e-commerce channels a decade ago.

Next Generation Data Center

Nearly 800 million consumers and merchants around the world participated in the 2020 Double 11 Global Shopping Festival—the world's biggest online shopping event. They connected through countless digital promotions, online transactions, livestreaming sessions and more, generating unprecedented levels of activity online.

As the festival played out, Alibaba's cutting-edge data center technology ensured a seamless experience. Tens of thousands of liquid-cooled servers in five super data centers in China handled enormous compute loads without disruption. Together, those data centers comprise one of the world's largest liquid-cooling server clusters.

Alibaba's liquid-cooled servers also made this the most environmentally friendly Double 11 yet. The servers are immersed in a special insulating coolant that removed the need for fans, air conditioners and other electricity-guzzling cooling equipment.

In turn, this reduced energy consumption by more than 70%. Meanwhile, AI-powered intelligent maintenance robots proactively prevented disruptions at Alibaba's super data centers. The robots detected and fixed faulty hard disks without the need for human supervision, resulting in hassle-free real-time maintenance that kept the festival running smoothly.

Powered by Cloud-Native Solutions

Consumers placed hundreds of millions of orders during this year's Double 11. Activity peaked at 583,000 orders per second during the height of the festival, and Alibaba's cloud-native solutions played a crucial role in making that possible.

Alibaba Cloud's X-Dragon architecture and Container Service for Kubernetes (ACK) can scale up to one million containers in one hour during the transaction peak time. Using the largest real-time computing platform in China, Alibaba handled up to 1.7 exabytes of data per day. Its cloud-native Data Warehouse AnalyticDB provided millisecond-level data processing capabilities.

Meanwhile, its cloud-native PolarDB database posted a 50% year-on-year increase in read/write performance, supporting over 100 million orders during the peak transaction time for China post.

All told, Alibaba's cloud-native solutions delivered unparalleled efficiency, processing millions of orders for China's delivery company STO Express with a 30% reduction in IT costs and reducing data synchronization of Cainiao, Alibaba's logistics platform, from one hour to a just three minutes.

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orders for China's delivery company STO Express with a 30% reduction in IT costs and reducing data synchronization of Cainiao, Alibaba's logistics platform, from one hour to a just three minutes. The result was a seamless experience for nearly 800 million consumers around the world.

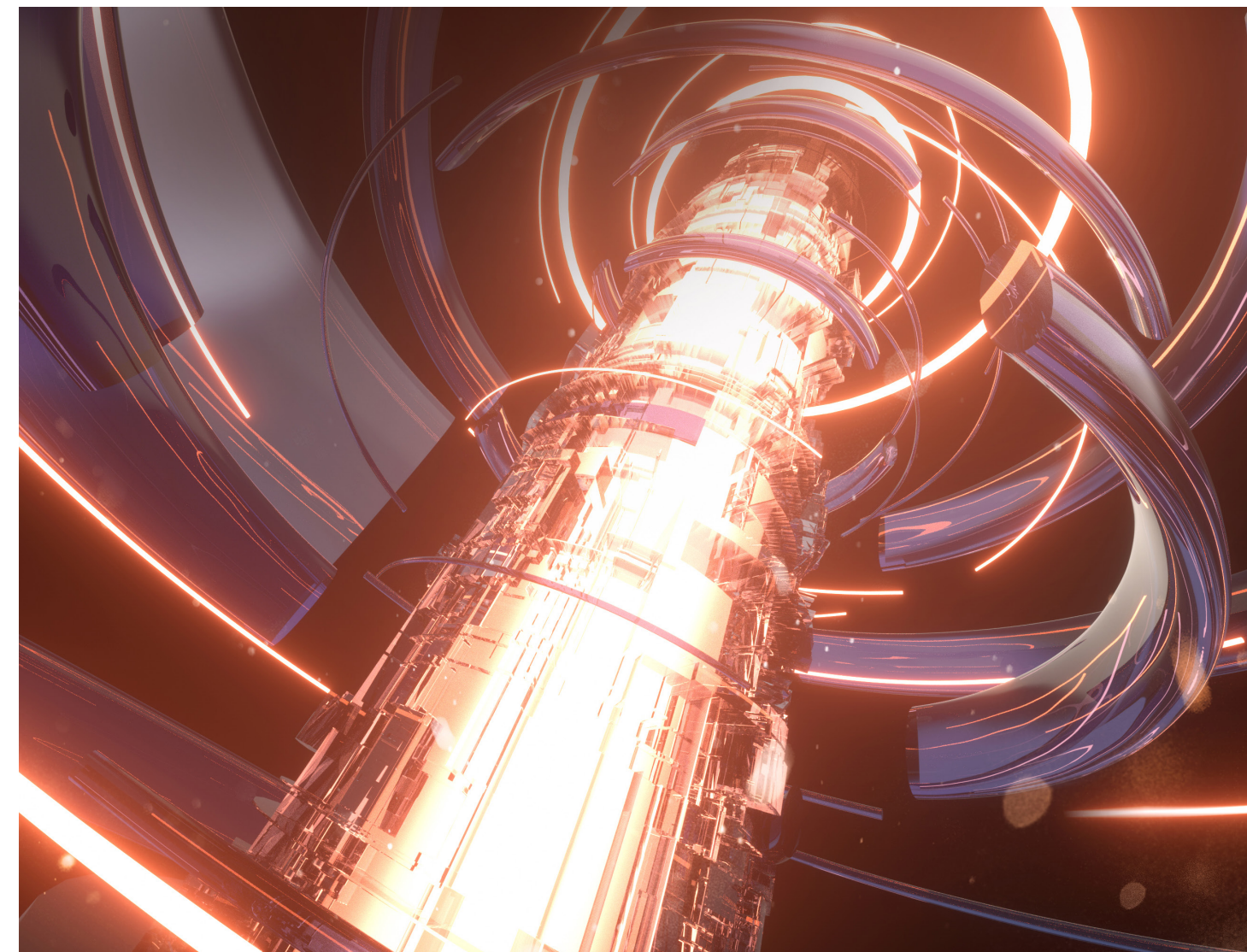
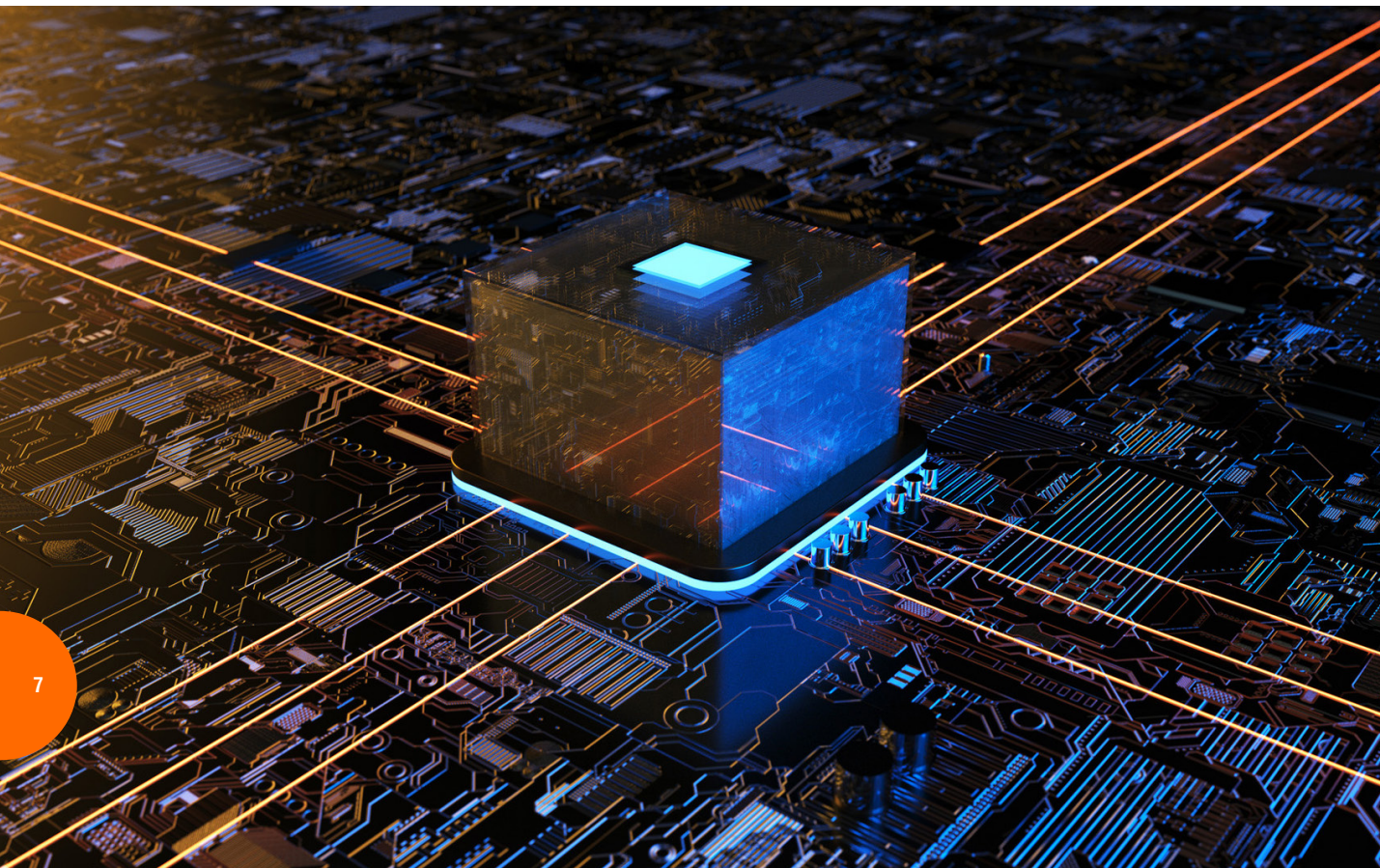
Engaging E-commerce Livestreaming Experience

Livestreaming took center stage at 2020 Double 11. Now one of the biggest trends transforming online shopping, livestreaming creates an immersive experience that consumers can access anywhere.

The Covid-19 pandemic accelerated the livestreaming trend, which will see an estimated 524 million users in China alone by the end of 2020. Tens of thousands of livestreams broadcast on Taobao Live. Livestreaming is not without its challenges, especially when it comes to livestreaming to global audience who speak different languages. Real-time language

translation has proven difficult in the past, reducing consumers' interest in participation.

Alibaba overcame those challenges at 2020 Double 11 with its award-winning AI-powered translation technology deployed on AliExpress, Alibaba's global retail marketplace. The marketplace unveiled the world's first real-time livestreaming translation feature on an e-commerce platform. The model is powered by an innovative speech model developed by DAMO, Alibaba's research initiative. It supported simultaneous translation from Chinese to English, Russian, Spanish and French. During 11.11, over 70% of the AliExpress merchants leveraged this translation capability, which can also reduce inaudibility in noisy livestreaming environments and even understand accented speech. Eight million global viewers watched over 9,000 livestreams on AliExpress during the festival.



By the Numbers: 11.11 Global Shopping Festival 2020 Highlights

Just
26 seconds
after 11.11 shopping
began, peak orders hit
583,000
per second



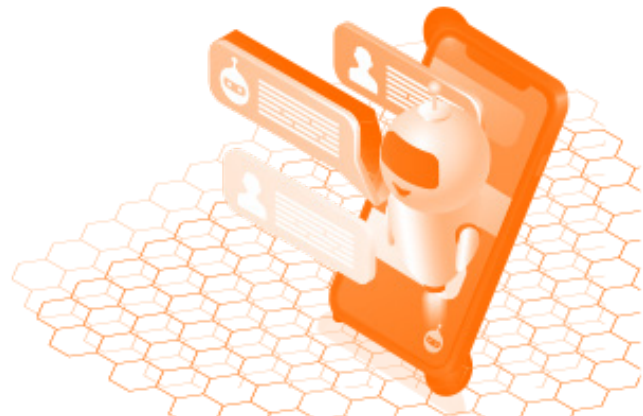
Consumer Application
Livestreaming with less than
1 second latency, boosting
up to 5% GMV growth

Cloud-Native
Processing power
equals to 230 hi-res
photos of each of the
world's 7 billion people

Digital Infrastructure
Saved up to 70 million kilowatt
hours of electricity per year, which
is sufficient to power 16,000+
households in the UK in a year

- Processing power equals to 230 hi-res photos of each of the world's 7 billion people
- 7.7 trillion lines of real-time data handled equals 15x UK Web Archive at British Library[1]
- Total GMV US\$ 74.1 Billion (RMB 498.2 Billion) an 26% YoY growth
- 583,000 Orders Created per Second at Peak
- 800+ Million Participating Consumer
- 2,321 Million Parcel Orders Processed

- 330,000 Users Place Orders for New Cars
- 1,406 Counties Sell Agricultural Products
- 1,000 Cities to which One-hour Delivery Service is Extended
- 80% Core Business is Deployed on Container
- 100+ Alibaba Cloud Native Products Support Scale and Innovation
- 31,000+ Overseas Brand



Virtual anchor and real - time translation to boost sales

Virtual anchors helped raise as much as
300,000 RMB a night for a merchant
over **70%** of the AliExpress merchants leveraged
their real- time translation capability



Live streaming for shopping
8 million
global viewers watched over
9,000 live streams
on Ali Express during the festival



7.7 trillion

lines of real - time data
handled equals
15x UK Web Archive
British Library



80% reduction of computing resource
for every
10,000 transactions conducted

Alibaba used state-of-the-art green technologies to ensure environmentally-friendly operation during 11.11

Hangzhou hyper scale data center with liquid coolant can save up to **70 million** kilowatt-hours of electricity per year



3D modeling design platform

Reduced the model creation time from **3 hours** to **10 seconds**

Over **100,000** showrooms created, and used by **60 million** consumers during the festival



Handled **1.7 exabytes**

of data per day during the 11 - day festival, equivalent to processing 230 high - res photos of each of the billion people worldwide.



It is sufficient to power over

16,000

households

in the UK in a year,

*Average electricity usage per month in UK households is about 350kWh

