Overview of Alibaba Cloud DNS

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A Internet surviving test 20 years ago

1999 is the year in the eve of China’s Internet booming. Most of people have no idea on Internet

Can you survive with only Computer and Internet in 72 hours?
China’s Digital Economy - opportunity and Challenges

- Top 10 Internet Companies, 3 Chinese Companies
  - Clothing
  - Food
  - Travel
  - Transportation
  - Social Networking
  - Ecommerce
  - Entertainment
  - Mobile Payment

91 Internet PLC (Public Limited Companies) in China, Market Value 5.4 trillion RMB

- Ecommerce Market size 428 billion USD
  - Alibaba, JD

- Online Entertainment Market size 30 billion USD
  - Tencent, Netease

Mobile Internet Users 817 million

Alibaba is one of active Large Internet Companies which supports and contributes more than an half of China’s Digital Economy and activates.
Alibaba Ecosystem

Alibaba’s mission: To Make it Easy To Do Business Anywhere

Data Create and Refuel

Trust Building

Some number of 2018 “Double 11” Festival: 10 billion GMV (RMB) in first 2 minutes, up to 490 k/s transaction
Alibaba Cloud DNS – the Role and Challenges

Alibaba Cloud DNS is a highly available and scalable Domain Name System (DNS) that provides authoritative DNS servers and DNS management services.

Challenges

**Huge size and scale**
(Serve ~1 billion users, 160 million queries per day, manage 20 regions and Millions VMs)

- High Performance (QPS)
- High availability (SLA)
- Accurate traffic scheduling and load balance (multi-policies)

Try to have control on every single loop in DNS resolution
What we do DNS in Cloud?

Domain name Resolution
Use domain name to identify the servers in DC, and the Cloud service instances
Self-developed Software with high performance

Network connection
Provide connections inside and outside the cloud.
Private Zone and customized DNS technology to connect VPCs

Traffic scheduling
Traffic scheduling based on different weights, different regions and AZ
Abundant China ISP lines and World lines

Failover & Recovery
To provide high availability with high redundancy
Alibaba Cloud monitoring platform
Alibaba Cloud DNS - the Products and Services

Provide Managed DNS and GEO DNS in various networks and scenarios

Domain name Resolution
Managed DNS / Authoritative DNS Hosting 20 million zones

Private Zone
Inner DNS for VPC 10,000 PVT-Zones

GTM
Global traffic Management for failover and recovery

ASD
ASD (Apsara Stack DNS) DNS in Private Cloud

Alibaba Cloud DNS is the largest DNS provider in Asia
Alibaba Cloud DNS Global Deployment

Alibaba Cloud DNS fully uses the facilities and infrastructure of Alibaba Cloud

Global 20 Regions, 57 AZ
Benefits

Alibaba Cloud DNS offers the following benefits:

- **Stability & Reliability**
- **High performance**
- **Security assurance**
- **Global deployment**
- **Intelligent resolution**

Provide **100%** availability, using state-of-the-art cloud DNS cluster technology.

Handle requests peaked up to **100s** million QPS Per-cluster.

Worldwide propagation of record changes in **5 seconds**

https://www.alibabacloud.com/help/doc-detail/58166.htm?spm=a2c63.p38356.b99.4.703e3de9sz32av
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Protecting your domain names from DDoS attacks up to 100s million QPS

Globally distributed BGP data centers, DNS queries are responded to both smartly and rapidly.

With various resolution lines and advanced scheduling algorithm, Domain name resolution in an intelligent, fast, and accurate manner

https://www.alibabacloud.com/help/doc-detail/58166.htm?spm=a2c63.p38356.b99.4.703e3de9sz32av
More Capacities

Alibaba Cloud DNS developed the advance services based on customers’ requirements

- IPv6
- DNSSEC
- DNS TCP
- Localized Root Service

Authoritative DNS in June 2018
Public DNS in Oct 2019
Alibaba Public DNS: www.alidns.com

To be online in the end of 2019
Supporter of DNS Flag Day
Consideration on Data privacy, fast failover and network autonomy

RFC7706 VS. Root instance
Case 1: Traffic Scheduling

A simple case to use DNS weighted record for load balance

```
web.domain A 1.2.3.4 2
1.2.3.4 1
```

Three times query, there will be 2/3 return 1.2.3.4, 1/3 return 5.6.7.8
Case 2: DNS for VPC and Isolated Network

To provide private DNS resolution for each VPC in a scalable, stable and efficient approach

Provide private zones in a single common DNS which enable different VPCs and private namespace
Case 3: Application Do DNS

To void interference from third party network and DNS. Have more control of the whole resolution loops

- Provide HttpDNS SDK for APP developers to enable the app do the DNS in application level
  Accurate Geolocation, avid domain name hijacking, no impact of TTL, act very quickly, gated launch
- Provide Software-defined DNS using FC which enables domain owners to response with more end user information
  Fast failover, Load balance scenarios
Content

- Background
- China and Alibaba
- Alibaba Cloud DNS Introduction
- Thoughts and Hopes
Some Thoughts

Two driving force to DNS technology

• The evolution of Infrastructure Technology
  ADD, Edge Computing, IoT, Mixed network scenarios

• Internet governance policy enhancement
  Privacy, encrypted DNS. etc

Application-level DNS will change largely the diagram of DNS ecosystem

  How to interoperate with different platform?
Hope for Future - Challenges and Collaboration

We see challenges and need collaboration in the community

**Challenges**

1. Security threat
2. Interconnection with mixed Cloud
3. Technology and Governance

**Collaboration**

1. To build trust & Consensus
2. Share best practice and information
3. Open source and standardization

*Let’s build a stable and secure infrastructure together!*