Alibaba Cloud

阿里云公共DNS

Product Introduction

Alibaba Cloud

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Document conventions

Style	Description	Example
⚠ Danger	A danger notice indicates a situation that will cause major system changes, faults, physical injuries, and other adverse results.	⚠ **Danger:** Resetting will result in the loss of user configuration data.
🔔 Warning	A warning notice indicates a situation that may cause major system changes, faults, physical injuries, and other adverse results.	🔔 **Warning:** Restarting will cause business interruption. About 10 minutes are required to restart an instance.
🔊 Notice	A caution notice indicates warning information, supplementary instructions, and other content that the user must understand.	🔊 **Notice:** If the weight is set to 0, the server no longer receives new requests.
? Note	A note indicates supplemental instructions, best practices, tips, and other content.	? **Note:** You can use Ctrl + A to select all files.
>	Closing angle brackets are used to indicate a multi-level menu cascade.	Click **Settings**> **Network**> **Set network type**.
Bold	Bold formatting is used for buttons , menus, page names, and other UI elements.	Click **OK**.
Courier font	Courier font is used for commands	Run the `cd /d C:/window` command to enter the Windows system folder.
Italic	Italic formatting is used for parameters and variables.	`bae log list --instanceid` *Instance_ID*
[] or [a|b]	This format is used for an optional value, where only one item can be selected.	`ipconfig [-all|-t]`
{} or {a|b}	This format is used for a required value, where only one item can be selected.	`switch {active|stand}`

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1.What is Alibaba Cloud Public DNS?

This topic describes the overview, development history, and benefits of Alibaba Cloud Public DNS. Public DNS resolves domain names in a fast, secure, and stable way for a variety of terminals.

Overview

Public DNS provides public DNS servers to perform recursive lookups for Internet users across the world. This service is focused on providing secure and fast first hops for Internet access requests from terminals. Public DNS provides recursive lookups by using the HTTP, DNS over HTTPS (DoH), and DNS over TLS (DoT) protocols. Public DNS provides a **fast, secure, and stable** DNS service for terminals.

The public DNS servers provided by Public DNS use the following IP addresses:

IPv4 addresses:

- 223.5.5.5

- 223.6.6.6

IPv6 addresses:

- 2400:3200::1

- 2400:3200:baba::1

Development history

Public DNS is a public DNS service that was launched in 2014.

The number of nodes of Public DNS is increasing year by year. All Internet users, regardless of the Internet service provider (ISP), can connect to the public DNS servers and obtain required resources in no time. It uses the EDNS Client Subnet technology. The increase of DNS nodes and improvement of scheduling accuracy ensure high service stability.

Alibaba Cloud has been proactively working to develop and promote IPv6. Public DNS has supported IPv6 since 2019 and became the first public DNS service in China that supports both IPv4 and IPv6. To prevent DNS hijacking and protect user privacy, Public DNS started to support DoT and DoH to achieve encrypted data transmission in 2020.

Key milestones

1. In 2014, Public DNS was launched to provide free DNS services for all Internet users.

2. At the end of June 2020, Public DNS Commercial Edition was released for public preview. The Commercial Edition provides recursive lookups by using HTTP, DoH, and DoT protocols. It also provides the report feature. Public DNS SDKs for Android and iOS were available for download.

3. In April 2021, the public preview period of Public DNS Commercial Edition ended and this service was officially released.

Benefits

Fast response

- Users can access the nearest DNS node clusters around the world based on the BGP anycast technology.

- Changes to DNS records in the paid edition of Alibaba Cloud DNS are synchronized to Public DNS in real time. This avoids delay of DNS cache updates caused by the TTL settings, so users can immediately access the latest DNS records.

- The number of recursive lookups is reduced to minimize latency.

- User terminals can cache DNS records to accelerate domain name resolution.

- Public DNS provides a high-performance DNS system based on Data Plane Development Kit (DPDK) to respond to DNS queries.

Security and privacy protection

- DoH is used to ensure data privacy. Data is encrypted during transmission.

- Public DNS is independent of specific ISPs and therefore can prevent man-in-the-middle attacks.

Intelligent scheduling and disaster recovery

- A highly available architecture is adopted. DNS nodes are deployed in multiple data centers across geographic regions.

- Based on the global CDN resources and IP address library of Alibaba Cloud, public DNS can precisely identify the sources of users and direct these users to the nearest resources.

- Public DNS provides 17 anycast node clusters and intelligent DNS acceleration services worldwide. Users are routed to the nearest nodes and can obtain DNS responses with the minimum latency.

Comprehensive DNS data system

- Alibaba Cloud DNS is hosting nearly half of domain names in China. It supports resolutions of both public and private domain names and achieves precise request scheduling.
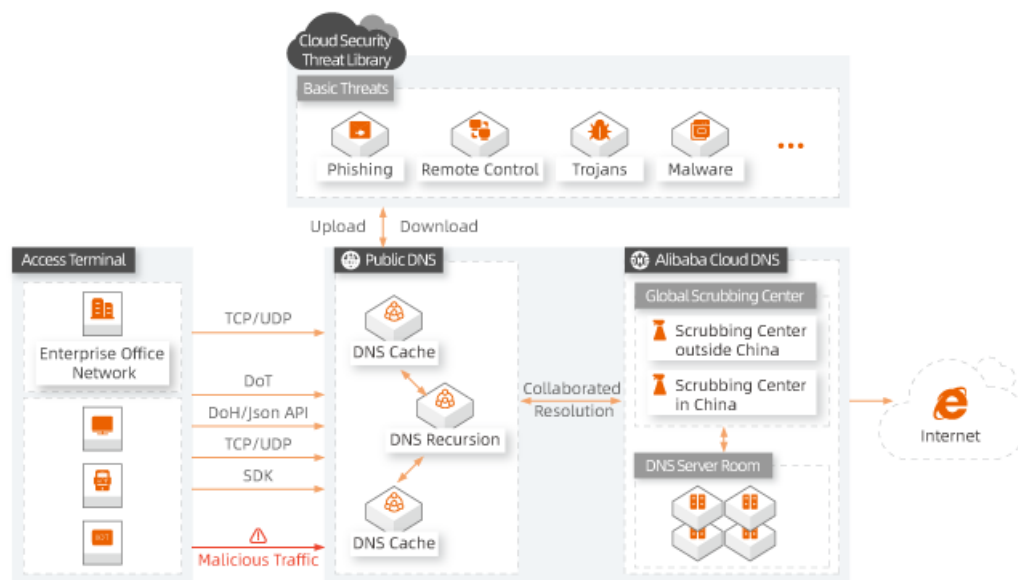
DingTalk group

2.Features

This topic describes the overall architecture and features of Alibaba Cloud Public DNS.

Overall architecture

Features

Networkwide basic DNS resolution

Provides basic DNS resolution for all domain names on the Internet. Public DNS can resolve domain names that are registered with Alibaba Cloud or a third-party domain name registrar. It also supports DNS resolution by using DNS over HTTPS (DoH) and DNS over TLS (DoT).

Accelerated domain name access

- Allows terminals to cache DNS records. This accelerates domain name access from terminals.

- Reduces recursive resolution and allows DNS requests to be directly sent to an authoritative DNS server. This accelerates domain name access.

- Updates the resolution results rapidly. The recursive DNS server of Public DNS and the authoritative DNS server of Alibaba Cloud DNS update the resolution results at the same time to make the resolution results take effect in seconds.

User privacy protection

- Supports the DoT and DoH protocols, which are developed based on Transport Layer Security (TLS). TLS is used for secure communications between users and servers of Public DNS. This ensures user privacy and prevents data leakage.

- Supports the TLS 1.2, TLS 1.3, HTTP/1.1, and HTTP/2 protocols.

Hijacking prevention

- Bypasses local DNS servers of Internet service providers (ISPs) to prevent domain hijacking.

- Supports anti-DDoS capabilities, which prevent terminals from being affected by distributed denial of service (DDoS) attacks on DNS servers.

Intelligent scheduling

- Intelligently determines the source of a visitor and returns the IP address of the nearest resolution line based on the source.

- Supports EDNS Client Subnet (ECS) to ensure precise scheduling.

- Achieves switchovers in seconds when a node fails. This ensures network stability.

Support for IPv6

Supports both IPv4 and IPv6 addresses.

Rich report logs

- Allows users registered with Alibaba Cloud to obtain access log reports of historical domain names from Public DNS.

- Allows users to query the number of DNS requests and rankings of domain names and subdomains.

3.Benefits

This topic describes the benefits of Alibaba Cloud Public DNS. Public DNS features authoritative Domain Name System (DNS) resolution, end-to-end recursive DNS resolution, access acceleration, global nodes, and stability.

End-to-end resolution and accelerated access to domain names

About a half of the domain names in China are hosted on Public DNS. The data of both authoritative DNS resolution and recursive DNS resolution is stored in Alibaba Cloud DNS. This reduces the number of recursive lookups so that requests for accessing domain names are directly sent to the requested nodes. This accelerates access to domain names.

Update of resolution results in seconds and support for switchover

- Public DNS works with the authoritative servers of Alibaba Cloud DNS to update resolution results in seconds.
- Public DNS supports various scheduling policies to achieve disaster recovery.

Global multi-node deployment

- A total of 17 DNS cluster nodes are deployed around the globe. This allows users to access the nearest nodes with low latency.
- Public DNS provides resolution lines of six major Internet service providers (ISPs) in China, which cover most provinces. The ISPs are China Unicom, China Telecom, China Mobile, CERNET, Dr. Peng Telecom & Media Group, and China Broadcasting Network. The resolution lines outside China are distributed in different countries.
- Public DNS supports intelligent DNS resolution to direct users to the nearest nodes based on sources of access requests. This enables fast access with low latency.

Advanced technologies and rich experience in DNS

Alibaba Cloud has been committed to the DNS field for many years. It has developed a comprehensive series of DNS solutions. Alibaba Cloud can implement resolution on its authoritative and recursive DNS servers by using its own DNS solutions.

High service stability

Public DNS runs on abundant nodes and supports precise scheduling. Based on years of experience in the DNS field, Alibaba Cloud delivers high-quality and stable DNS services for all users.

Multi-terminal integration

Public DNS Commercial Edition supports multiple types of terminals. Terminals that run iOS or Android can access Public DNS Commercial Edition by using Alibaba Cloud Public DNS SDKs, API operations.

4.Scenarios

Alibaba Cloud Public DNS supports various types of terminals such as PCs, browsers, and Internet of Things (IoT) devices. Public DNS Free Edition is provided for regular Internet users. Public DNS Commercial Edition is provided for enterprise users. Public DNS can be used in the following scenarios: anti-hijacking and access acceleration for mobile apps, and network security of enterprise users.

Access acceleration for regular users

Public DNS Free Edition provides a free resolution service for regular users.

Target users: all Internet users, especially regular Internet users.

Access method: Regular users can change the IP address of their DNS server to one of the IP addresses that are provided by Public DNS. Terminals such as PCs, laptops, and mobile phones are supported. For more information, see Access Alibaba Cloud Public DNS Free Edition as a regular user.

Benefits:

- Access acceleration: enables users to access the nearest nodes and improves the access speed.

- Access security: ensures access security and prevents man-in-the-middle hijacking.

- Service reliability: ensures service reliability based on the global distribution of nodes.

Privacy protection for browser vendors

Target users: browser vendors.

Access method: Browser vendors can change the IP address of their DNS server to one of the IP addresses that are provided by Public DNS. They can also use Public DNS SDKs to access Public DNS.

Benefits: accelerates access to domain names on browsers. The DNS Cache feature and multi-node capabilities of Public DNS enable accelerated access to all domain names on browsers. This improves the overall user experience.

Privacy protection: Major international browsers such as Google Chrome and Mozilla Firefox support the DNS over HTTPS (DoH) protocol to protect user privacy. DoH encrypts DNS requests to prevent attacks and hijacking by Internet service providers (ISPs) or men-in-the-middle. This improves the data privacy and security of browser users. User privacy is ensured in Public DNS.

Acceleration and stability for smart terminals

Target users: providers of smart terminals and apps, such as smart speakers, smart routers, IoT devices, mobile phones, and mobile apps.

Access method: Providers can enable smart terminals to access Public DNS by using API operations, Public DNS SDK for iOS, or Public DNS SDK for Android. More SDKs will be provided in the future.

Benefits:

- Support for multiple types of terminals: enables terminals to access Public DNS by using Public DNS SDKs.

- Accelerated access: allows terminals to cache DNS records on edge nodes. This accelerates the access speed of terminals. Access to the nearest nodes with low latency is supported.

- Privacy protection: provides secure data transmission for terminals.

- Security protection: prevents domain hijacking and provides basic anti-DDoS capabilities.

- Network stability: deploys multiple nodes. This ensures service stability in a 4G mobile network that has weak signals.

5.Terms

This topic describes the terms of Domain Name System (DNS) to help you use Alibaba Cloud Public DNS.

DNS

DNS is an Internet service that translates domain names into IP addresses. Based on a distributed database, DNS makes it easier for you to access the Internet without the need to remember a string of machine-readable IP addresses.

domain name

To accommodate the increasing number of Internet users, a hierarchical tree structure is used for naming on the Internet. A host or router connected to the Internet has a unique name in the DNS hierarchy. This name is called the domain name.

application terminal

The terminal devices and application services that are dedicated for network access, including but not limited to mobile devices, Internet of Things (IoT) terminals, mobile apps, and mini programs.

DNS over HTTPS (DoH)

A security protocol for encrypting DNS requests. Public DNS uses TLS-encrypted HTTP connections that are specified in the RFC 8484 specifications to implement DNS resolution.

DNS over TLS (DoT)

A security protocol for encrypting DNS requests. Public DNS uses TLS-encrypted TCP connections that are specified in the RFC 7858 specifications to implement DNS resolution.