

# CloudFlare DNS Anycast Services

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## Network

- Over 80 locations soon
- All services over Anycast

#### Europe China North America Asia CURRENT CURRENT CURRENT CURRENT Ashburn, Virginia Paris, France Chengdu, Sichuan Shenyang, Liaoning Amsterdam, Netherlands Chennai, India Atlanta, Georgia Prague, Czech Republic Shijiazhuang, Hebei Berlin, Germany Dongguan, Guangdong Hong Kong, Hong Kong Chicago, Illinois Bucharest, Romania Sofia, Bulgaria Foshan, Guangdong Tianjin, Tianjin Kuala Lumpur, Malaysia Dallas, Texas Stockholm, Sweden Xi'an, Shaanxi Copenhagen, Denmark Fuzhou, Fujian Mumbai, India Los Angeles, California Dublin, Ireland Vienna, Austria Hangzhou, Zhejiang Zhengzhou, Henan New Delhi, India Miami, Florida Düsseldorf, Germany Warsaw, Poland Hengyang, Hunan Osaka, Japan Minneapolis, Minnesota Frankfurt, Germany Zürich, Switzerland Guangzhou, Guangdong Seoul, South Korea UPCOMING Montréal, Québec Hamburg, Germany Jiaxing, Zhejiang Singapore, Singapore Jinan, Shandong Newark, New Jersey London, England UPCOMING Langfang, Hebei Tokyo, Japan Wuhan, Hubei Phoenix, Arizona Madrid, Spain Louyang, Henan Brussels, Belgium Wuxi, Jiangsu San lose, California Manchester, England Nanning, Guangxi UPCOMING Istanbul, Turkey Seattle, Washington Marseille, France Qingdao, Shandong Moscow, Russia Bangkok, Thailand Toronto, Ontario Milan, Italy Manila, Philippines Vancouver, British Columb Oslo, Norway Taipei, Taiwan UPCOMING Denver, Colorado Mexico City, Mexico Middle East Africa South America Oceania CURRENT CURRENT CURRENT CURRENT Buenos Aires, Argentina Cairo, Egypt Doha, Qatar Auckland, New Zealand Johannesburg, South Africa Lima, Peru Dubai, UAE Melbourne, Victoria, Austrailia Medellín, Colombia Mombasa, Kenya Kuwait City, Kuwait Sydney, New South Wales, Valparaíso, Chile Muscat, Oman Austrailia São Paulo, Brazil UPCOMING UPCOMING Lagos, Nigeria UPCOMING Perth, Australia Rio de Janeiro, Brazil Quito, Ecuador Current



Upcoming

# CloudFlare DNS expertise

- Deliver DNS answers in fast and reliable manner worldwide
- Extensive experience in absorbing large DDoS attacks
  - Multilayer defense architecture
  - We answer less than 1% of DNS packets, and no-one complains
    - As most are attack packets
- Hard to use us as amplifiers
  - We block most attack traffic, and DNS packet size is kept under 512 bytes



### DNS services: RRDNS

- Highly distributed authoritative server
- DNSSEC signing on the fly
- Data entered via API/UI replicated to edges in seconds
- FAST and reliable
- "ANY" suppressed

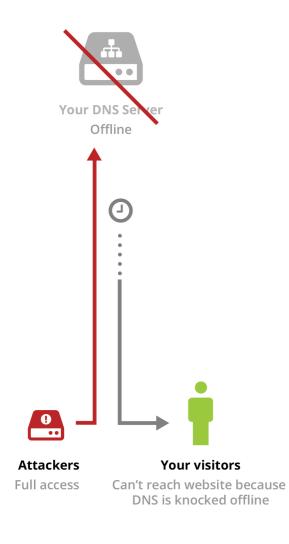
```
dig cloudflare.com ANY
```

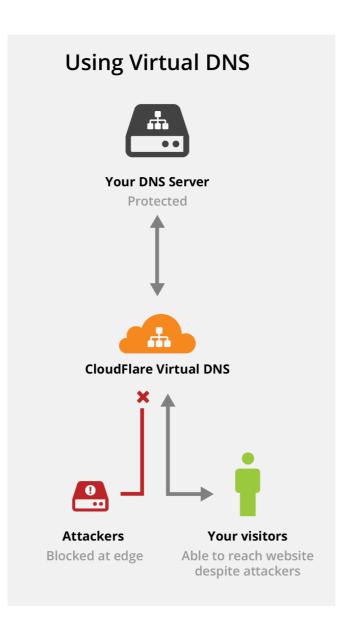
cloudflare.com. 3788 IN HINFO "Please stop asking for ANY" "See draft-ietf-dnsop-refuse-any"



# DNS products: Virtual DNS

#### Without Virtual DNS





- A proxy authoritative server
- We will cache data requested and answer from edge
- Intelligent fetching of answers from origins.
- No need to update us if zones added/deleted



# The cost of staying online?

- Providers need to capacity plan for attacks
  - We have mitigated 5xx Mp/s attacks
- Attacks evolve all the time
  - we see them all

19 DNS attack(s) / 44.11M pps

20 SYN attack(s) / 38.29M pps



### The new norm of DNS

- Anycast delivery
- Defense in depth
- DNSSEC on the fly
- Smaller answers
  - No need for 5-13 NS records
  - RSA needs to be retired (Key sizes 5x bigger than ECDSA)
  - Suppress ANY

