

## This webpage is not available



The server at [www.youtube.com](http://www.youtube.com) can't be found, because the DNS lookup failed. DNS is the web service that translates a website's name to its internet address. This error is most often caused by having no connection to the internet or a misconfigured network. It can also be caused by an unresponsive DNS server or a firewall preventing Google Chrome from accessing the network.

### Here are some suggestions:

- **Reload** this web page later.
- Check your internet connection. Restart any routers, modems, or other network devices you may be using.
- Check your DNS settings. Contact your network administrator if you're not sure what this means.
- Try disabling DNS prefetching by following these steps: Go to **Wrench menu > Options > Under the Hood** and deselect "Use DNS prefetching to improve page load performance."
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Error 105 (net::ERR\_NAME\_NOT\_RESOLVED): Unable to resolve the server's DNS address.

# DNS

Linux Yaz Kampı Bolu 2012  
Eray Aslan <eras@gentoo.org>

# DNS Nedir?

- Dağınık, ölçeklenebilir, güvenilir, “loosely coherent”, dinamik database
- Üç bölümden oluşur:
  - “Name Space”
  - Sunucular
  - Resolvers (istemciler)

# Eee, yani?

- Adres bilgisi gerektiği zaman, DNS adı verilen bu database cevap verir:

www.gentoo.org → 89.16.167.134

- Database ters eşleme bilgisi de tutulur.

# DNS Nedir?

- DNS ilave bilgiler de barındırır:
  - Adresler (ipv4, ipv6)
  - Güvenlik anahtarları
  - Mail Exchange bilgileri
  - Text kayıtları
  - Host hardware software bilgileri (gerçekten!)

# DNS nedir?

- DNS olumsuz cevap da verebilir:  
mmm.gentoo.org → NXDOMAIN
- Database'de boyle bir kayıt yok.

# DNS nedir?

- Not:
    - Database'de böyle bir kayıt yok  
ile
    - İstenilen kayıt türü yok
- farklı hatalar:

www.gentoo.org hinfo  null, NOERROR

# Dağınık

- Data yerel tutulur ama her yerden sorgulanabilir:
  - “single point of failure” yok
- DNS sorguları (queries) her hangi bir cihazdan gelebilir
- Uzak DNS bilgileri performans iyileştirmesi için yerel önbellekte tutulabilir

# Loosely Coherent

- Database her zaman kendi içinde tutarlı
  - Zone'ların (bilgi dosyaları) seri numarası var
  - Bilgi değiştiğinde seri numarası arttırılır
- Master database'de yapılan değişiklikler slave database'lere çoğaltılır
- Önbellekte tutulan bilgi zaman aşımına tabiidir



# Ölçeklenebilir

- Database için boyut sınırlaması yok
- Sorgu sayısı sınırlaması yok
- Sorgular otomatik olarak master, slave, cache sunucuları arasında dağıtılır

# Güvenilir

- Bilgi çoğaltılır
  - Master'dan slave'lere
- İstemciler master veya slave sunucuları sorgulayabilirler
- DNS UDP veya TCP kullanır (port 53)
  - UDP kullanıldığı zaman güvenli taşıma, sıralama görevini DNS protokolu sağlar

# Dinamik

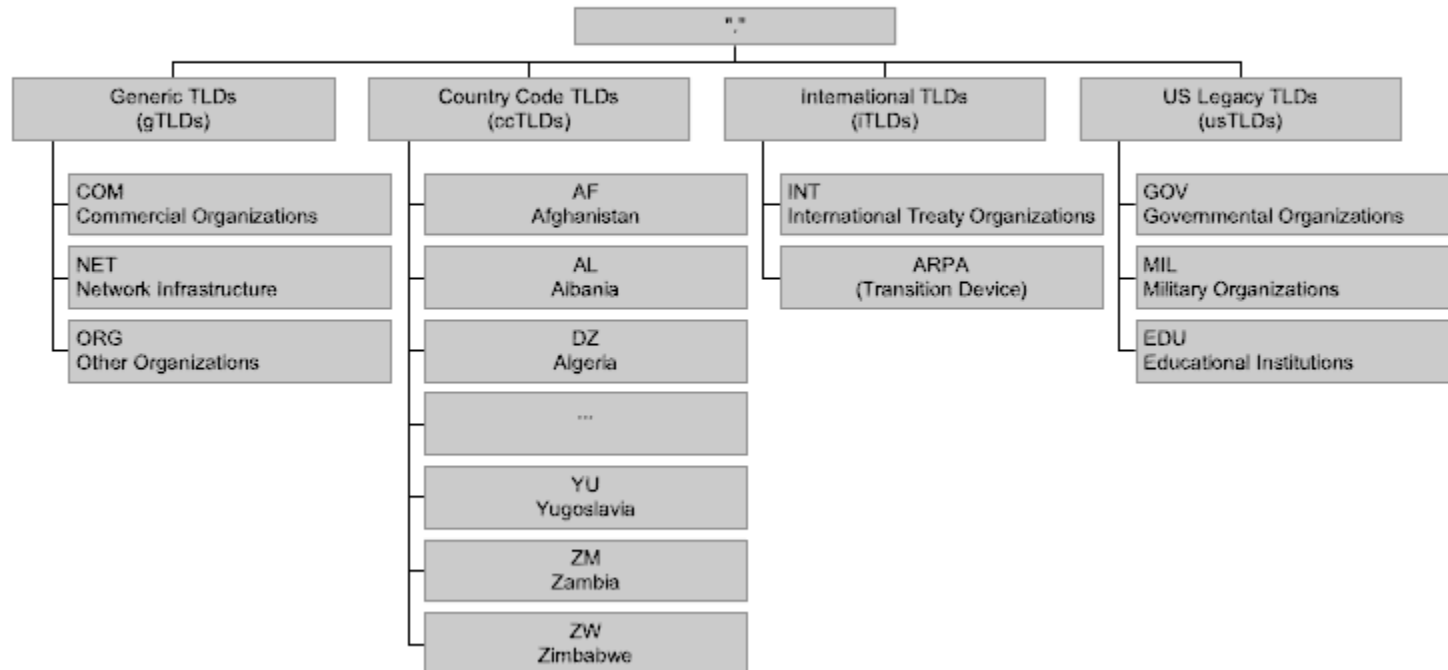
- Database dinamik olarak update edilebilir
  - Her kayıt ilave edilebilir, çıkarılabilir veya değiştirilebilir
- Master'da yapılan değişiklikler çoğaltmaya sebep olur
  - Sadece master dinamik olarak update edilebilir

**NAME SPACE**

# Name Space

- Hiyerarşik yapı
- İsimler
  - Konum
  - Birim
  - Nesneye göre seçilebilir

# TLDs



# Name Space

- Fully Qualified Domain Name (FQDN)

`www.gentoo.org.`

- DNS FQDN'den “resource record”lara eşleme yapar
- İsimler database anahtarı olarak kullanılır

# Domain Names

- Bir domain name çeşitli parçalardan (kelimelerden) oluşur
  - Her parça arasında “.”
  - Her parça en fazla 63 karakter
- Bir FQDN en fazla 255 karakter (noktalar dahil)



# Resource Records

- DNS'in yaptığı bu isimleri Resource Record (RR) adı verilen data ile eşleştirmek

www.gentoo.org. A  89.16.167.134

- Bu ismin adresi budur

**NAME SERVERS**

# Name Servers

- Name Servers (DNS sunucuları) gelen sorulara cevap verirler
- Sunucu çeşitleri
  - Authoritative (yetkili)
    - Master (primary)
    - Slave (secondary)
  - (Caching) recursive
  - Karışık

**RESOLVERS**

# Resolvers (istemciler)

- Resolvers uygulamalar adına sorgu yaparlar
- Genelde sistem kütüphaneleri tarafından gerçekleştirilir (libc):

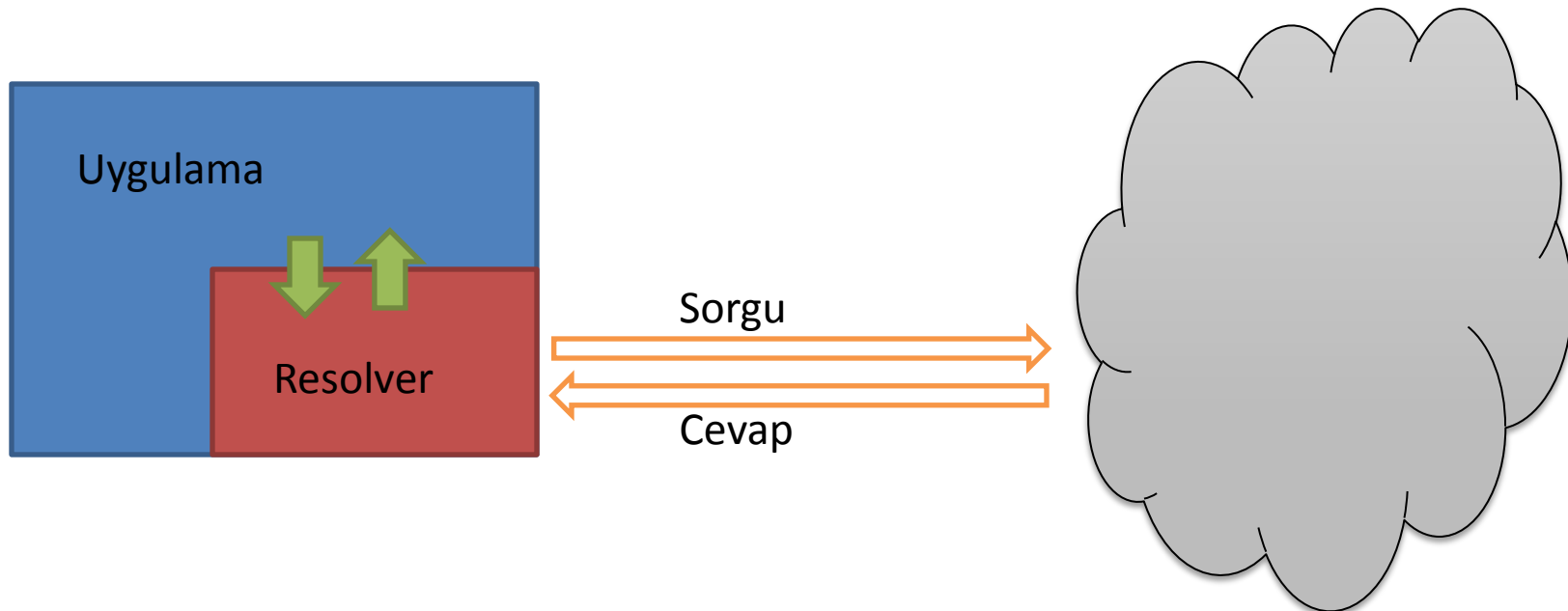
```
getnameinfo([...]); and getaddrinfo([...]);
```

**veya**

```
gethostbyname([...]); and gethostbyaddr([...]);
```

# Resolvers

- Resolver = DNS İstemcisi
- Uygulamalar resolver'a soru sorarlar



# Resolvers

www.youtube.com/watch?v=trWxS9MNn4jA

## This webpage is not available



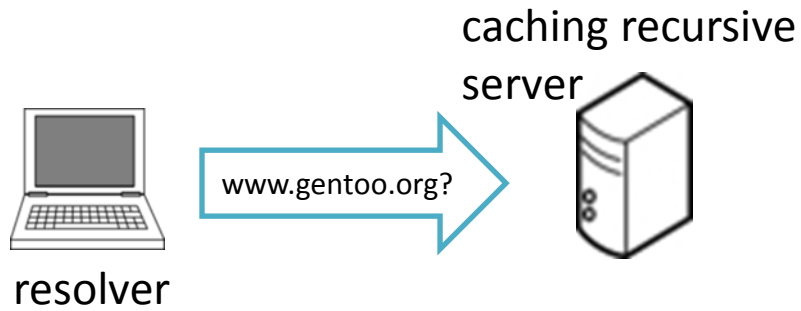
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Error 125 (net::ERR\_NAME\_NOT\_RESOLVED): Unable to resolve the server's DNS address.

# DNS Sorguları





# DNS Sorguları



resolver

caching recursive  
server



root  
server

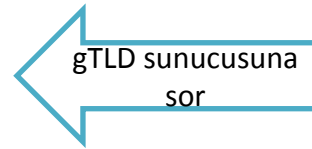


# DNS Sorguları



resolver

caching recursive  
server



root  
server



# DNS Sorguları



resolver

caching recursive  
server



root  
server



gTLD  
server



# DNS Sorguları



resolver

caching recursive  
server



root  
server



gTLD  
server



# DNS Sorguları



resolver

caching recursive  
server



gentoo.org  
server



root  
server



gTLD  
server



# DNS Sorguları



resolver

caching recursive  
server



gentoo.org  
server



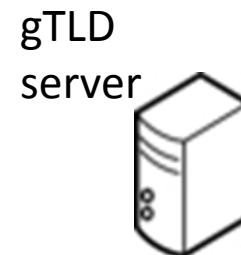
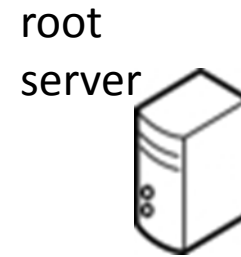
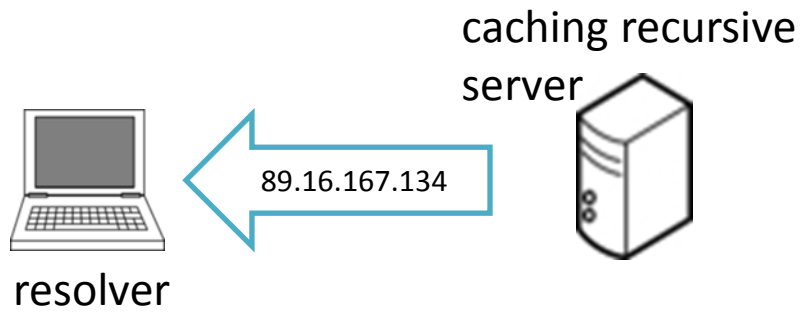
root  
server



gTLD  
server



# DNS Sorguları



# DNS Sorguları



resolver

caching recursive  
server



root  
server



1. Bütün cevaplarda “glue” var
2. Cevaplar önbellekte

gentoo.org  
server

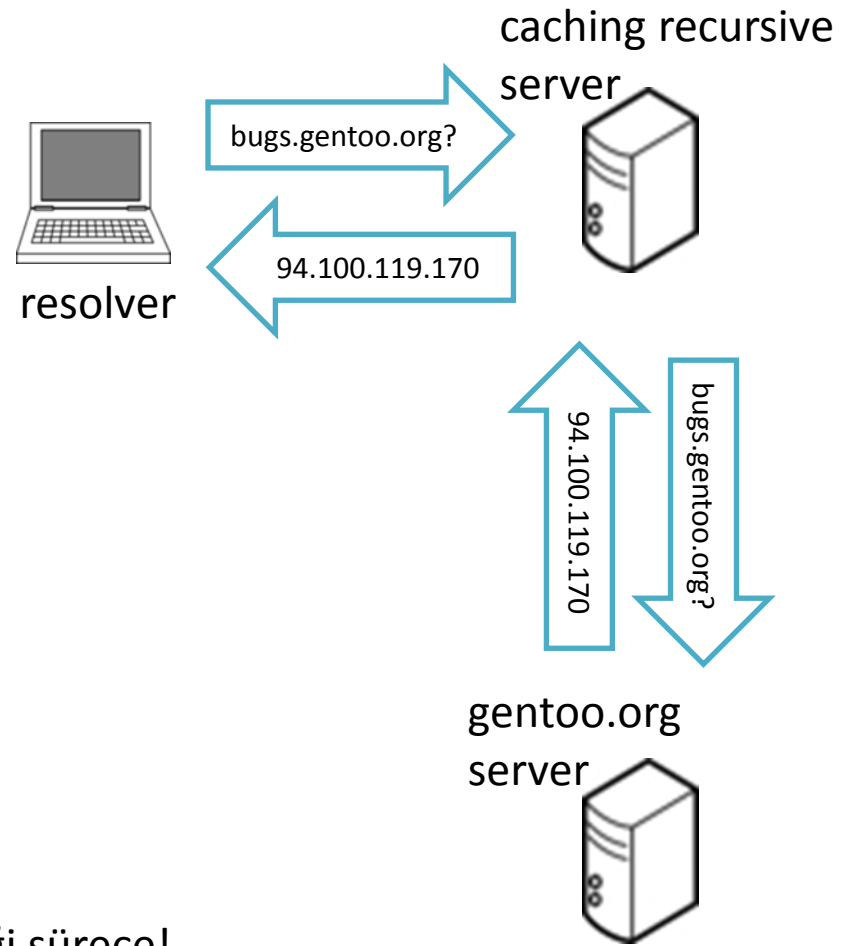
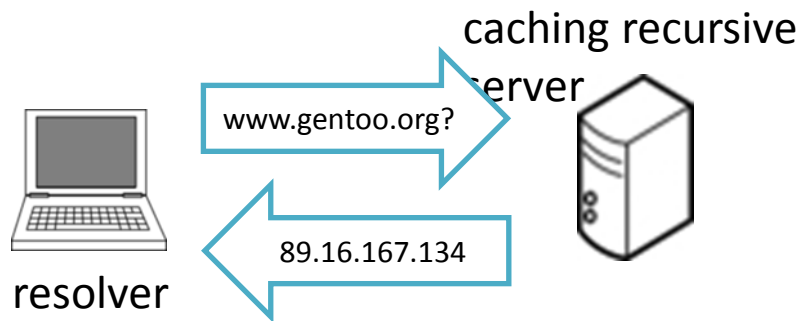


gTLD  
server



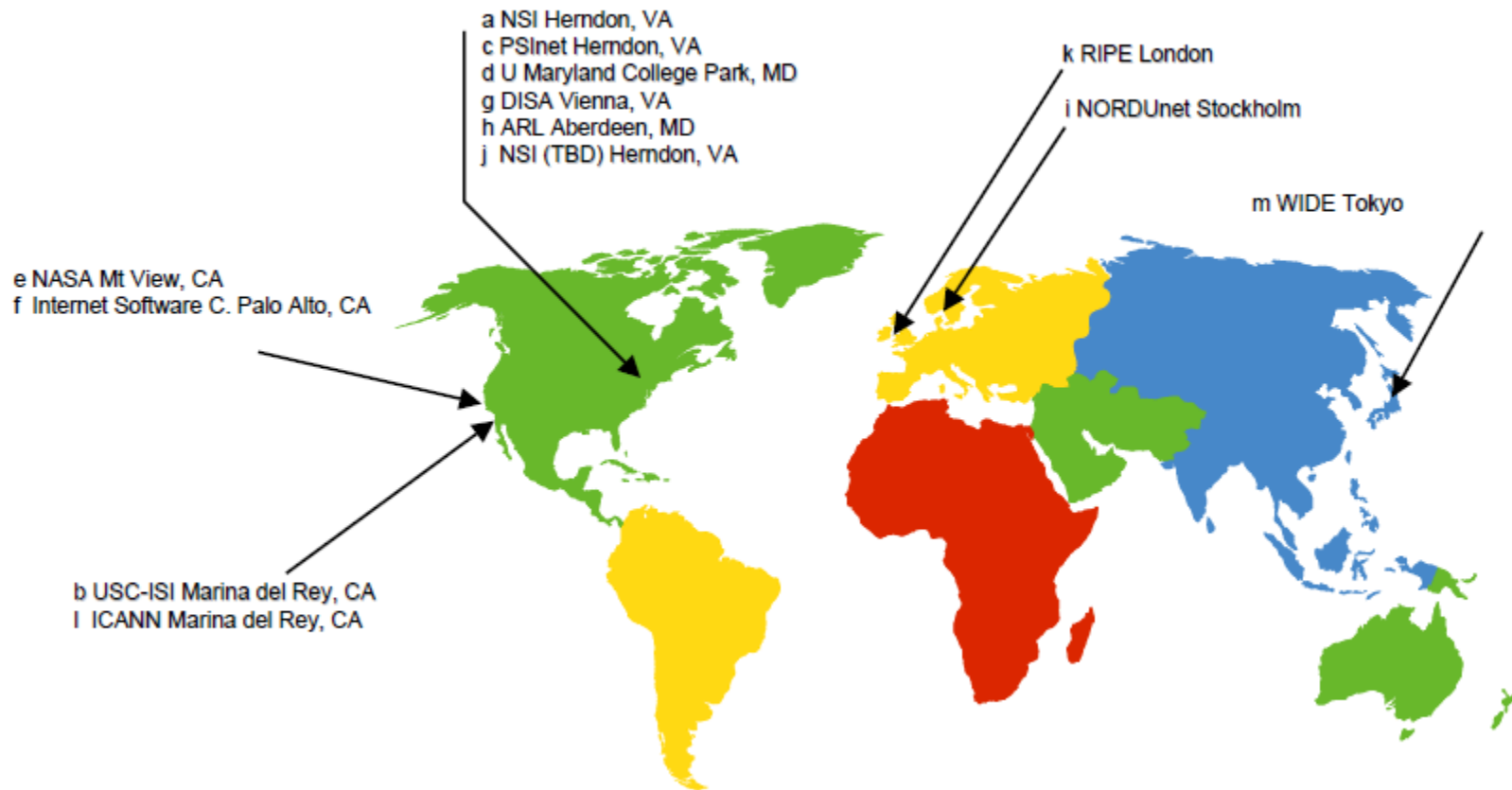


# DNS Sorguları



TTL izin verdiği sürece!

# Root Servers – ca 2000



# Root Servers



~~~~~

```
entity [ttl] IN record-type data
```



*[The page contains faint, illegible markings or bleed-through from the reverse side.]*



1000



```
$ORIGIN .
$TTL 900
[...]
; asia subdomain
asia.example.test      IN      NS       ns.asia.example.test
                        IN      NS       test.asia.example.test
                        IN      NS       dns.example.com

; glue records
ns.asia.example.test   IN      A        192.168.222.10
test.asia.example.test IN      A        192.168.222.50
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# Sorular?

