

# Testing DNS dan Domain

Imam Suharjo

Testing Jaringan Komputer

FTI Universitas Mercu Buana Yogyakarta



# Testing /Check DNS

- Sebuah Domain bisa jadi memiliki banyak sub domain
- Memiliki banyak server yang berbeda lokasi
- Contoh Konfigurasi DNS untuk Email, Subdomain, FTP server, dll
- Perlu dilakukan untuk menguji apakah DNS (domain, subdomain) yang dimiliki sdh berfungsi
- Jika DNS tidak berfungsi bisa dianalisa /diketahui apa masalahnya

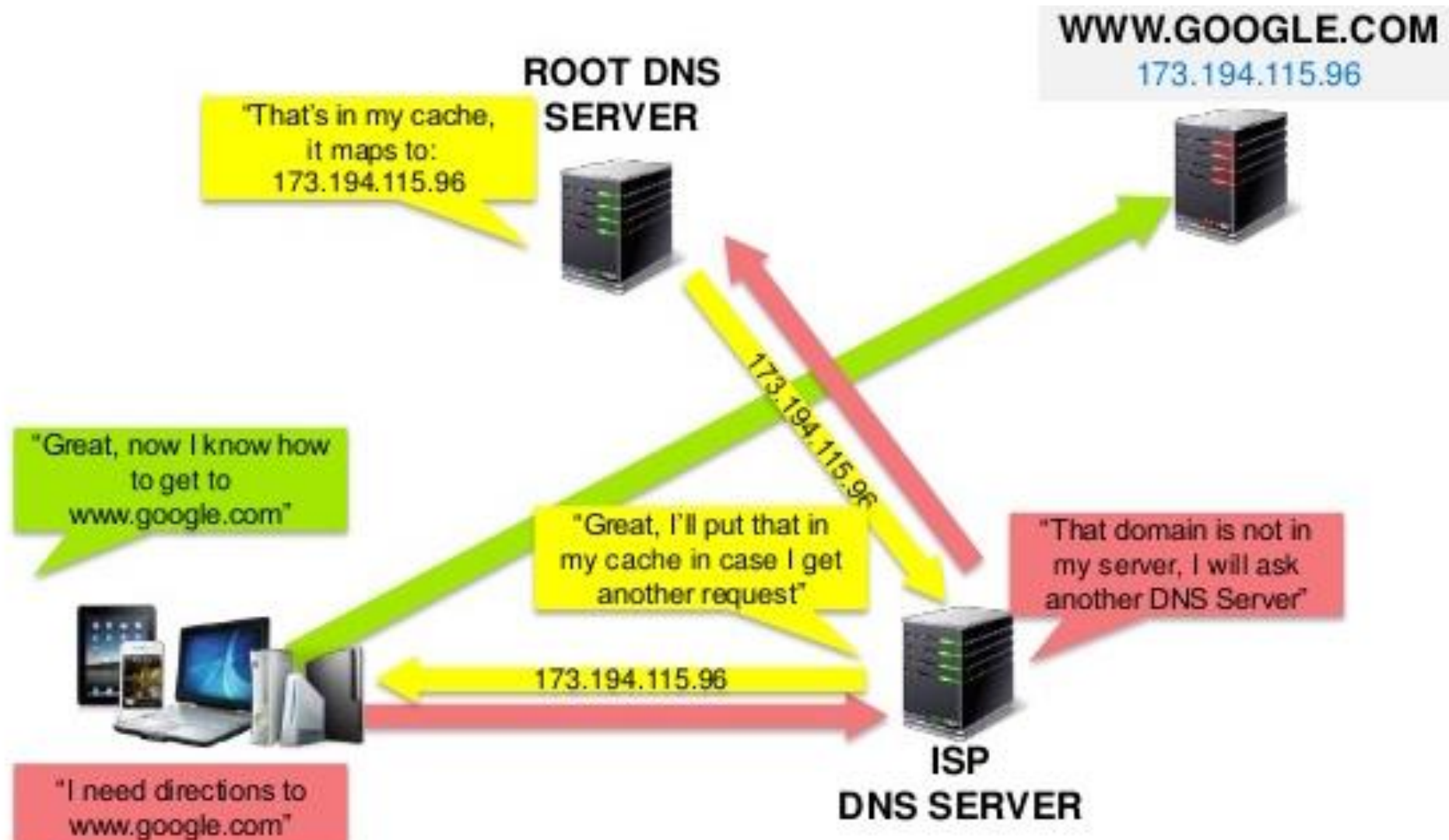


# Domain Name System (DNS)

- DNS adalah layanan Internet yang menerjemahkan nama domain menjadi alamat IP. Karena nama domain dengan abjad akan lebih mudah diingat. Pada dasarnya Internet didasarkan pada alamat IP.
- Setiap kali menggunakan nama domain, oleh karena itu, layanan DNS harus menerjemahkan namanya ke alamat IP yang sesuai.
- Saat mengunjungi domain seperti [mercu.id](http://mercu.id) , komputer Anda mengikuti serangkaian langkah untuk mengubah alamat web yang dapat dibaca manusia menjadi alamat IP yang dapat dibaca oleh mesin. Hal ini akan terjadi setiap kali menggunakan nama domain seperti , membuka situs web, kirim email atau mendengarkan radio internet.
- Sistem DNS sebenarnya adalah jaringan sendiri. Jika satu server DNS tidak tahu bagaimana menerjemahkan nama domain tertentu, itu akan meminta yang lain, dan seterusnya, sampai alamat IP yang benar dikembalikan.



# Cara Kerja DNS



# DNS Record Types

Types	DESCRIPTION
A	Address Record
CNAME	Canonical Record Name
MX	Mail Exchange Record
AAAA	IPV6 Address Record
TXT	Text Record
PTR	Pointer Record
SRV	Service locator
SPF	Sender policy framework
NS	Name Server Record
SOA	Start of authority Record

To see video training check out here:  
[www.asmed.com/nt2](http://www.asmed.com/nt2)



# DNS

- Sistem/Server untuk Domain
- Domain = Internet Domain = Nama untuk sebuah host/server/web
- Seperti akses Internet : .com .net .org dll
- Domain lokal : namaku.local (Local domain)
- Tujuannya :
  - Seperti Buku Telepon / Mempermudah pemanggilan
  - Adanya Domain → Mudah, Sebagai Identitas, Branding (tempo.co an.tv rcti.tv), Nama yg Public.



# Ada apa saja di DNS?

Beberapa istilah di DNS :

- DNS Server
  - DNS resolver
- DNS Client
- IP address – Domain
  
- Mercu.id – 103.58.111.100
- Mercu.localhost – IP komputer lokal – 127.0.0.1



# DNS resolver

- **DNS resolver** adalah client side dari Domain Name System yang melakukan query dan menjadi inisiator translasi nama domain ke IP address. **DNS resolver** merupakan bagian dari sistem yang memudahkan anda untuk melakukan browsing dengan menggunakan nama-nama domain dan bukan lagi menggunakan IP address.
- Contoh ada sebuah perusahaan besar yang memiliki banyak sekali komputer yang terhubung dengan jaringan internet. Merekapun harus mengisi/memasukkan DNS resolver untuk mempermudah dalam mengakses situs-situs di internet. Jika perusahaan tersebut tidak memiliki DNS server sendiri, maka bisa diisi DNS resolver dari ISP yang digunakan.
- Redirect DNS resolver adalah pemindahan tujuan DNS server dari DNS resolver. Biasanya hal tersebut dilakukan jika kita memiliki jumlah komputer yang banyak dan mau mengganti dns resolver dengan yang baru karena dns resolver yang lama sudah tidak bisa digunakan. Karena jika dilakukan penggantian secara manual membutuhkan waktu yang sangat banyak. (Idreg.net)



# DNS Server & Client

- Server yang bekerja sebagai DNS : menyimpan informasi nama domain dan IP address. IP DNS bisa digunakan oleh client sebagai Server DNS di setingan (network).
- Perlu software untuk DNS server
- DNS yg digunakan client bisa > 1, sebagai alternatif DNS (Primari dan Secondary DNS).

Network Connection Details

Network Connection Details:

Property	Value
Connection-specific DN...	
Description	Qualcomm Atheros AR946x Wireless I
Physical Address	80-A5-89-6E-28-83
DHCP Enabled	Yes
IPv4 Address	10.2.116.203
IPv4 Subnet Mask	255.255.252.0
Lease Obtained	Rabu, 31 Mei 2017 14.11.55
Lease Expires	Rabu, 31 Mei 2017 18.21.59
IPv4 Default Gateway	10.2.116.1
IPv4 DHCP Server	10.2.116.1
IPv4 DNS Servers	10.2.116.1 118.98.44.50 118.98.44.20 202.65.112.21
IPv4 WINS Server	
NetBIOS over Tcpip En...	Yes

# DNS Server di linux

- DNS Server di linux biasanya dijalankan oleh program yang bernama named. Program ini merupakan bagian dari paket bind yang dikoordinasikan oleh Paul Vixie dari The Internet Software Consortium. Biasanya program ini terletak di /usr/sbin/named dan dijalankan pada waktu booting dari /etc/rc.d/init.d/named start. Agar named dijalankan pada setiap booting masukkan named ke daftar server yang harus distart dengan menggunakan ntsysv.

(pemula.linux.or.id)



# Dimana IP DNS digunakan?

- ✓ DNS Server
- ✓ PC Client
- ✓ Router
- ✓ Perangkat jaringan lain yang membutuhkan akses ke domain (internet).
- ✓ Primari dan alterntif : Alternatif jika yang primary bermasalah / tidak menjawab.

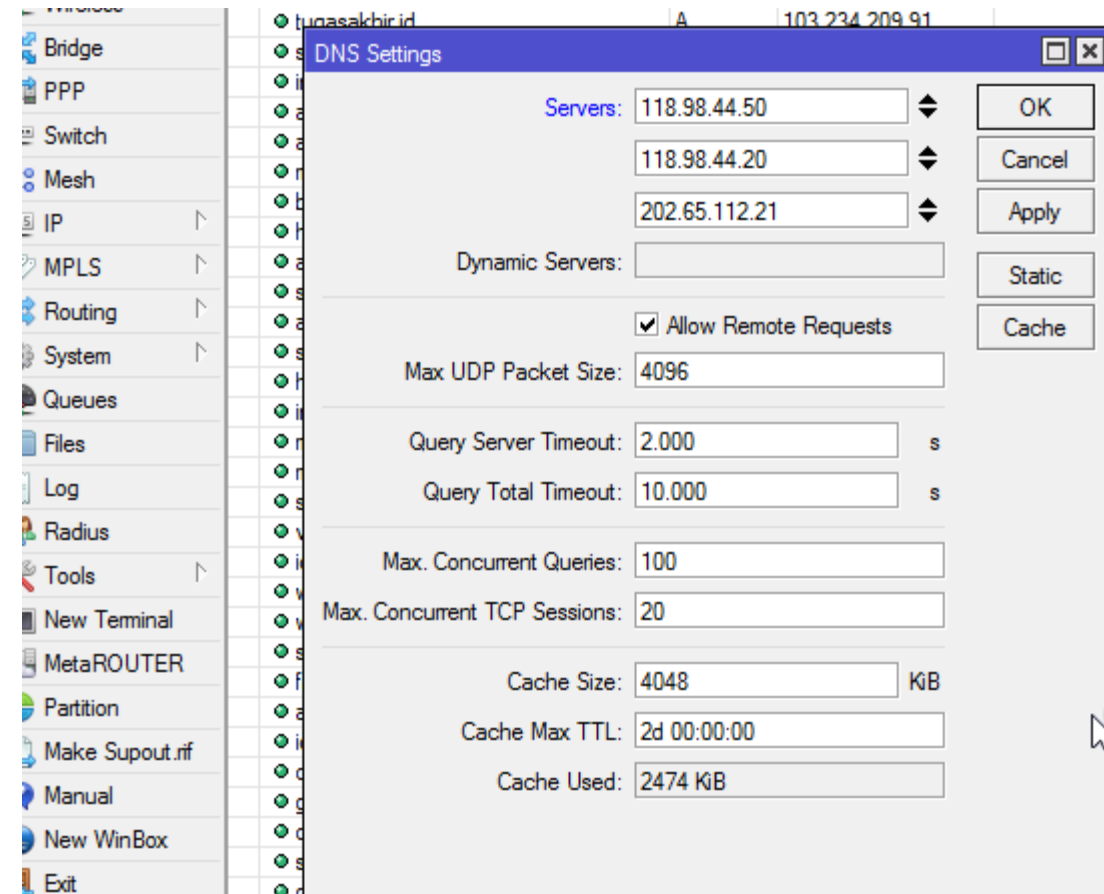


# Pengujian dan Cek DNS



# Kenapa DNS serba tahu tentang domain?

- DNS server tidak menyimpan semua informasi domain di dunia, namun kalau di tanya (request) dia tahu dan akan menjawab.
- Dari mana dia bisa tahu?
- DNS Tahu dari **Parent(s) DNS** → parent juga DNS.



# DNS Cache

- Cache DNS : temporary (Sementara) data (DNS) yang tersimpan di lokal. Nama, IP, Type, TTL.
- Seberapa lama tersimpan : TTL Time To Life
- TTL : detik, menit, jam hari.
- Sesuai dengan yang membuat / yang punya domain ybs.
- Setelah TTL sebuah domain habis : maka record ttg domain trsb hilang sendiri.
  
- Cara hapus cache : ipconfig /flushdns



# Type DNS

Antara lain :

- A : domain – IPv4
- AAAA : domain – IPv6
- CNAME : Domain - Domain
- NS : Domain – Domain (NS)
- SOA : Domain – domain (NS)

DNS Cache

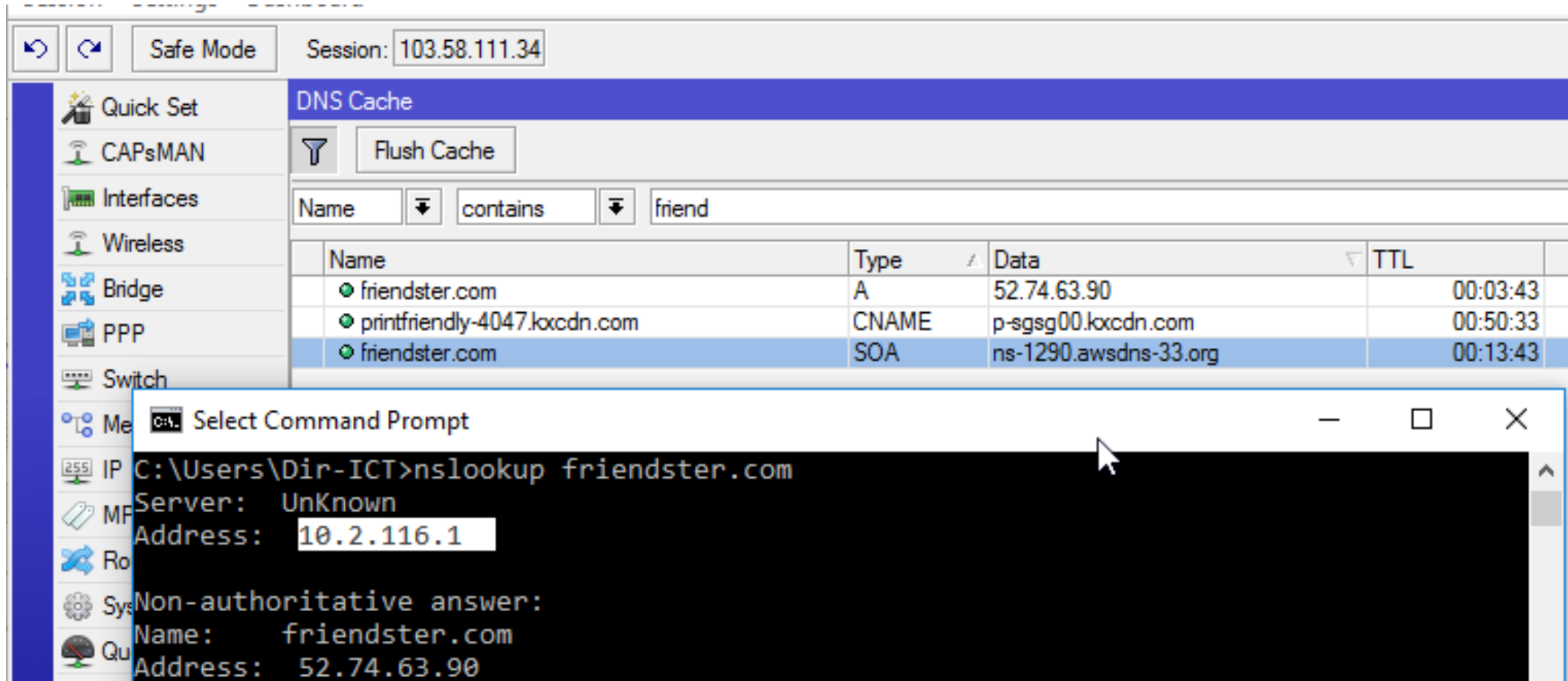
Flush Cache

Name contains mercubuana-yogya

Name	Type	Data	TTL
● elearning.mercubuana-yogya.ac.id	A	104.27.177.170	00:54:29
● mercubuana-yogya.ac.id	A	104.27.177.170	00:03:48
● mk.mercubuana-yogya.ac.id	A	104.27.177.170	00:44:20
● perpustakaan.mercubuana-yogya.ac.id	A	104.27.177.170	00:02:11
● support.mercubuana-yogya.ac.id	A	104.27.177.170	00:04:19
● elearning.mercubuana-yogya.ac.id	A	104.27.176.170	00:54:29
● mercubuana-yogya.ac.id	A	104.27.176.170	00:03:48
● mk.mercubuana-yogya.ac.id	A	104.27.176.170	00:44:20
● perpustakaan.mercubuana-yogya.ac.id	A	104.27.176.170	00:02:11
● support.mercubuana-yogya.ac.id	A	104.27.176.170	00:04:19
● ftm.mercubuana-yogya.ac.id	A	103.58.111.68	00:28:41
● svr68.mercubuana-yogya.ac.id	A	103.58.111.68	00:02:11
● blog.mercubuana-yogya.ac.id	A	103.58.111.67	00:27:51
● svr67.mercubuana-yogya.ac.id	A	103.58.111.67	00:04:46
● sia.mercubuana-yogya.ac.id	A	101.255.60.242	00:44:05
● fpsi.mercubuana-yogya.ac.id	CNAME	svr68.mercubuana-yogya.ac.id	00:02:11
● ict.mercubuana-yogya.ac.id	CNAME	svr67.mercubuana-yogya.ac.id	00:04:46
● mercubuana-yogya.ac.id	SOA	nelly.ns.cloudflare.com	00:54:19



# Cache di Mikrotik dan request di Windows



The image shows two overlapping windows. The background window is Mikrotik WinBox, displaying the DNS Cache configuration. The foreground window is a Windows Command Prompt showing the output of a nslookup command.

**Mikrotik WinBox DNS Cache:**

- Session: 103.58.111.34
- Filter: Flush Cache
- Search: Name contains friend

Name	Type	Data	TTL
friendster.com	A	52.74.63.90	00:03:43
printfriendly-4047.kxcdn.com	CNAME	p-sgsg00.kxcdn.com	00:50:33
friendster.com	SOA	ns-1290.awsdns-33.org	00:13:43

**Windows Command Prompt:**

```
C:\Users\Dir-ICT>nslookup friendster.com
Server: UnKnown
Address: 10.2.116.1

Non-authoritative answer:
Name: friendster.com
Address: 52.74.63.90
```



# DNS Cache di Windows → Lewat CMD

```
C:\Users\Dir-ICT>ipconfig /displaydns
```

```
Windows IP Configuration
```

```
www.gstatic.com
```

```
-----
```

```
Record Name . . . . . : www.gstatic.com
```

```
Record Type . . . . . : 1
```

```
Time To Live . . . . . : 1080
```

```
Data Length . . . . . : 4
```

```
Section . . . . . : Answer
```

```
A (Host) Record . . . : 172.217.27.3
```



# Record file host :

C:\Windows\System32\drivers\etc

- *# ini adalah contoh isi file hosts*  
*127.0.0.1 localhost loopback*  
*127.0.0.1 localdomain*  
*::1 localhost*  
*::1 localhost*



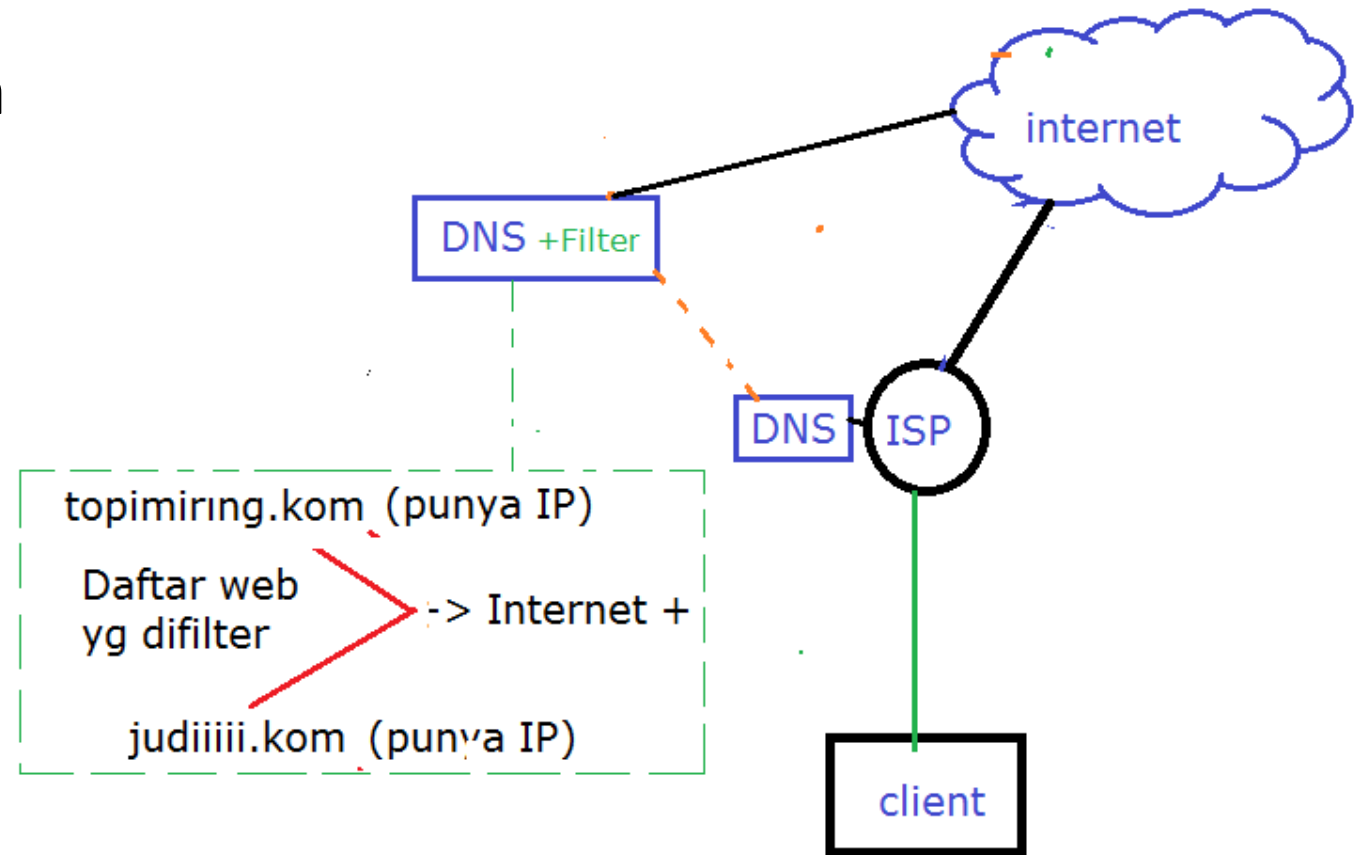
# Fungsi DNS Cache

- Sebagai Database lokal DNS Sementara
- Mempercepat request DNS berikutnya
- Informasi record DNS dari DNS server akan tersimpan sementara di cache selama TTL.

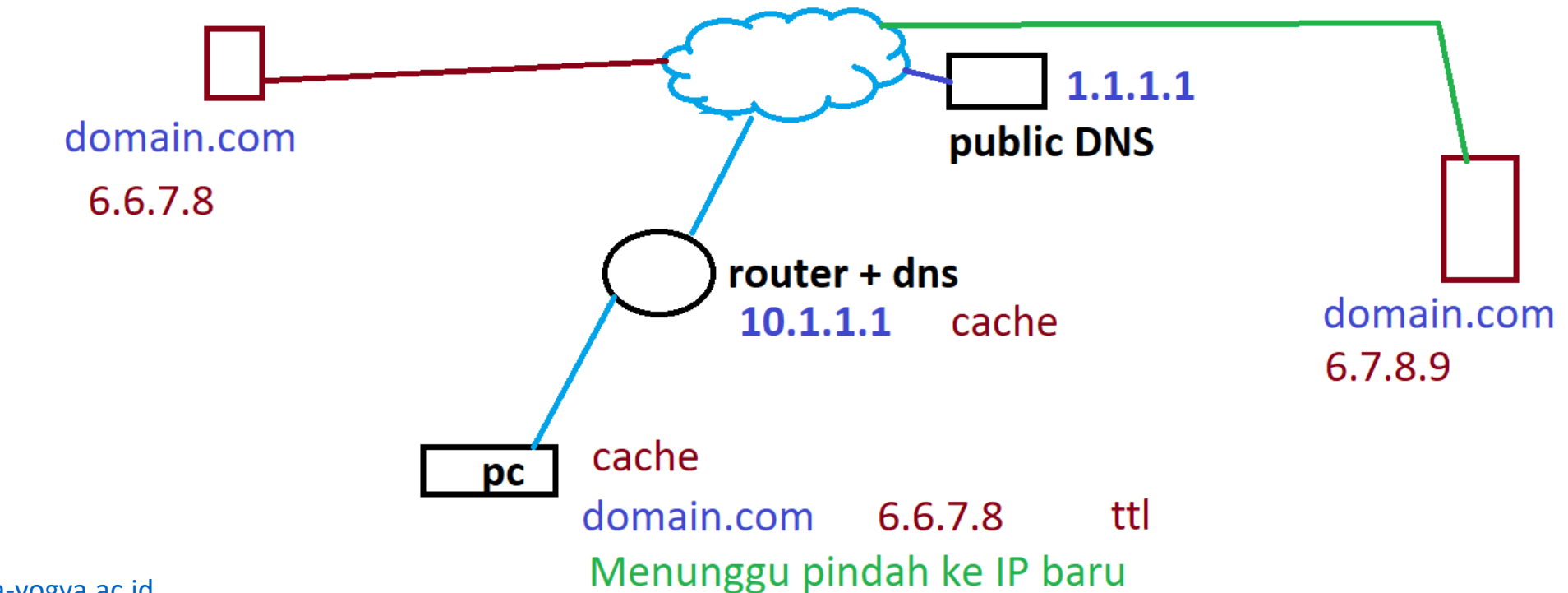
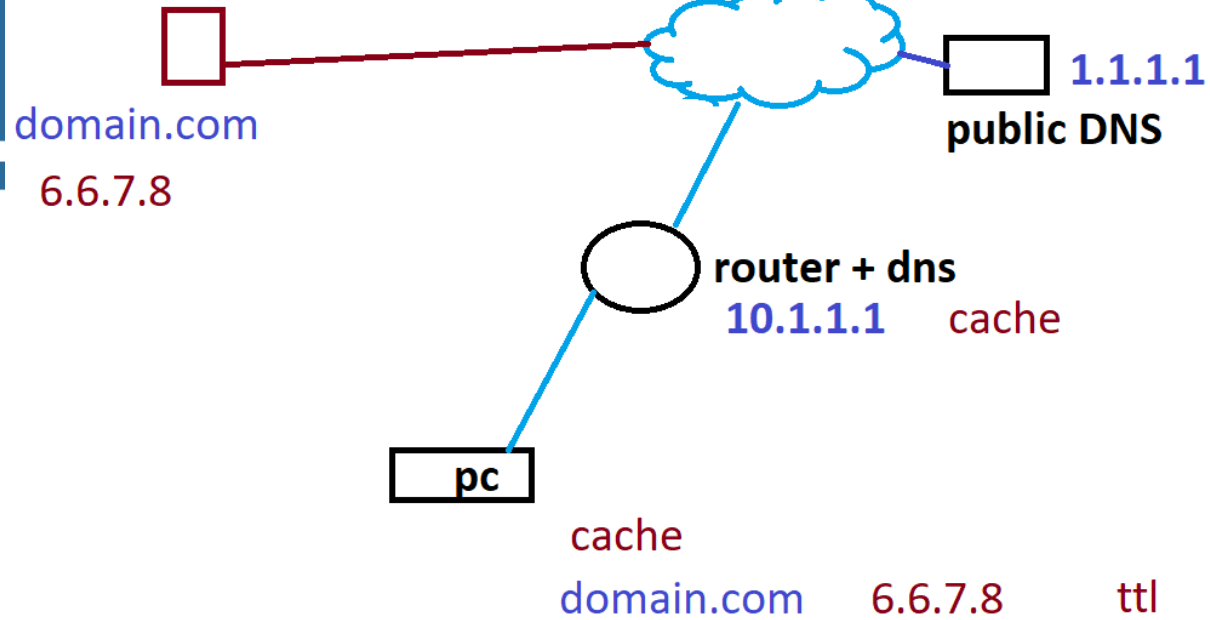


# Kasus : “Internet Positif” / “Nawala DNS”

- Karena yang digunakan adalah DNS “khusus”
- Bisa juga melakukan filtering / firewall DNS.
- Client tanya ke DNS ISP
- DNS ISP menggunakan parent DNS yg terfilter misal DNS Internet positif/ nawala
- Informasi DNS akan terfilter.



# Kasus Domain pindah Hosting



# Tool eksternal terkait DNS



# Cek DNS

- Digunakan untuk menguji apakah Sebuah domain sudah resolved engan baik di berbagai lokasi
- Biasanya digunakan saat sebuah domain/sub domain baru dibuat, ada perpindahan server (alamat IP), setelah terjadi gangguan dll
- Hasil test menunjukkan status OK (Centang) dari berbagai lokasi test.
- Jika ada yang tanda silang, bisa jadi DNS / Domain kita tidak bisa diakses dari lokasi tersebut (Mungkin masalah local di suatu area) seperti domain di Blokir, masalah DNS resolver yang mereka gunakan, dll.



# https://dnschecker.org (Tampilan awal)

SPONSORED SEARCHES ⓘ

dns test 🔍

dns lookup 🔍

### DNS CHECK

imam.web.id A 🔍 Search ⚙️

+ Add Custom DNS

🇺🇸 Holtsville NY, United States	-	ⓘ
Opensns ⓘ		
🇺🇸 Canoga Park, CA, United States	-	ⓘ
Sprint ⓘ		
🇺🇸 Holtsville NY, United States	-	ⓘ
Opensns ⓘ		
🇺🇸 Mountain View CA, United States	-	ⓘ
Google ⓘ		
🇺🇸 Dothan, United States	-	ⓘ
Comodo Secure DNS ⓘ		
🇨🇦 Barrie, Canada	-	ⓘ
Rogers Comm ⓘ		
🇷🇺 Russia	-	ⓘ
IONICA LLC ⓘ		

s://googleads.g.doubleclick.net/pagead/ads?client=ca-pub-12537853859700...

## CHECK DNS PROPAGATION

Have you recently switched web host or started a new website, then you are in the right place! DNS Checker provides free DNS lookup service for checking domain name server records against a randomly selected list of DNS servers in different corners of the world. Do a quick DNS propagation lookup for any domain name and check DNS data collected from all location for confirming that the website is completely propagated or not worldwide.



Hosting Bisnis Full Ultrafast SSD, Unlimited Email Account, 130GB Storage, Get it Now

OPEN

DNS Propagation Map by DNSChecker.org



# https://dnschecker.org (Tampilan Hasil)

## DNS CHECK

imam.web.id

A

Search



+ Add Custom DNS



Qwords Cloud Hosting

Discount Up To 75% Off

OPEN



Holtsville NY, United States

104.27.131.52

172.67.211.210

104.27.130.52



Opensns

Canoga Park, CA, United States

104.27.131.52

104.27.130.52

172.67.211.210



Sprint

Holtsville NY, United States

104.27.131.52

172.67.211.210

104.27.130.52



Opensns

Mountain View CA, United States

172.67.211.210

104.27.131.52

104.27.130.52



Google

Dothan, United States

104.27.130.52

104.27.131.52

172.67.211.210



Comodo Secure DNS

Barrie, Canada

104.27.131.52

172.67.211.210

104.27.130.52



Rogers Comm

Russia

104.27.131.52

172.67.211.210

104.27.130.52



IONICA LLC

Johannesburg, South Africa

104.27.131.52

104.27.130.52

172.67.211.210



Hetzner (Pty) Ltd

imam.web.id - DNS Propagation Map by DNSChecker.org



Resolved Not Resolved

DNS Lists

# Open DNS Cache Check

OpenDNS

CacheCheck

OpenDNS has huge caches, which is one reason OpenDNS makes your Internet experience faster. With CacheCheck, you can check what OpenDNS customers see when they request a domain. If there's something amiss, you may refresh OpenDNS's cache for that domain.

Enter a domain name to check:

CHECK THIS DOMAIN

Enter the code:

1wwhm

For domain owners:

OpenDNS gives you unique insight and control into how OpenDNS resolves your domain with OpenDNS CacheCheck.

South America	Rio de Janeiro, Brazil	Sao Paulo, Brazil	
	103.58.111.100	103.58.111.100	
North America	Ashburn, Virginia, United States	Atlanta, Georgia, United States	Chicago, Illinois, United States
	103.58.111.100	103.58.111.100	103.58.111.100
	Denver, Colorado, United States	Dallas, Texas, United States	Los Angeles, California, United States
	103.58.111.100	103.58.111.100	103.58.111.100
	Miami, Florida, United States	New York, New York, United States	Palo Alto, California, United States
	103.58.111.100	103.58.111.100	103.58.111.100
	Seattle, Washington, United States	Vancouver, British Columbia, Canada	Toronto, Ontario, Canada
	103.58.111.100	103.58.111.100	103.58.111.100
Europe	Amsterdam, Netherlands	Paris, France	Copenhagen, Denmark
	103.58.111.100	103.58.111.100	103.58.111.100
	Dublin, Ireland	Frankfurt, Germany	London, England
	103.58.111.100	103.58.111.100	103.58.111.100
Australia	Melbourne, Victoria, Australia	Sydney, New South Wales, Australia	
	103.58.111.100	103.58.111.100	
Asia	Dubai, United Arab Emirates	Hong Kong, China	Mumbai, Maharashtra, India
	103.58.111.100	103.58.111.100	103.58.111.100
	Tokyo, Tokyo-to, Japan	Singapore, Singapore	
	103.58.111.100	103.58.111.100	
Africa	Johannesburg, Gauteng, South Africa		
	103.58.111.100		

All locations returned the same (valid) answer.

17/06/2021

FTI - Mercu Buana Yogya

REFRESH THE CACHE

Imam Suharjo <http://imam.mercubuana-yogya.ac.id>

# DNSSTUFF

- Ada Report dari DNS yang kita cek

The screenshot shows the DNSstuff website interface. At the top, there is a navigation bar with the logo 'DNSstuff' and the tagline 'MANAGE | MONITOR | ANALYZE'. Below the logo, it says 'Your IP Address: 121.101.133.202' and 'SolarWinds'. There are several navigation links: 'Professional Toolset', 'Mail Server Test Center', 'Community', 'Network Monitoring Software', and 'Reviews'. Below the navigation bar, there are several tool categories: 'All Tools', 'Domain/WWW Tools', 'IP Tools', 'Networking Tools', and 'Email Tools'. A 'Free Tools & Trials' button is also visible. The main content area is titled 'Domain Tools' and contains several tool cards: 'DNSreport' (highlighted with a red circle), 'WHOIS/IPWHOIS Lookup', 'WWW Co-host Tool', 'Top Level Domain (TLD) Lookup', 'Abuse Lookup', 'ISP Cached DNS Lookup', 'Website Info', and 'DNS Lookup'. Each tool card has a title, a brief description, and a search input field with a 'Go' button. The 'DNSreport' tool is circled in red, indicating it is the focus of the report mentioned in the text.

17/06/2021

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# DNSSTUFF

## DNSReport Results for sedayu.net

Overall Results:

2

FAIL

1

WARNING

15

PASS

5

INFO

### PARENT

Status	Test Name	Information
WARN	Parent zone provides NS records	Parent zone does not provide glue for nameservers, which will cause delays in re addresses were not provided by the parent 'glue' and had to be looked up individ will usually occur if your DNS servers are not in the same TLD as your domain (fo "example.com"). In this case, you can speed up the connections slightly by havin  chloe.ns.cloudflare.com.   No Glue   TTL=172800 stan.ns.cloudflare.com.   No Glue   TTL=172800
PASS	Number of nameservers	At least 2 ( <a href="#">RFC2182</a> section 5 recommends at least 3), but fewer than 8 NS recor more than 7). This meets the RFC minimum requirements, but is lower than the of nameservers. A larger number of nameservers reduce the load on each and, si single point of failure. The NS Records provided are:  chloe.ns.cloudflare.com.   No Glue   TTL=172800 stan.ns.cloudflare.com.   No Glue   TTL=172800

### NS

Status	Test Name	Information
PASS	Unique nameserver IPs	All nameserver addresses are unique. The Nameservers provided are nameserver responsible for your mailservers or nameservers A records. If any are missing a n record when asked for data or were not specifically asked for that data:
PASS	All nameservers respond	All nameservers responded. We were able to get a timely response for NS record running correctly and your zone (domain) is valid. The Nameservers provided are those responsible for your mailservers or nameservers A records. If any are missi send an A record when asked for data or were not specifically asked for that data:
PASS	Open DNS servers	Nameservers do not respond to recursive queries. Your DNS servers do not announce that they are open DNS servers (i.e. answering recursively). Although there is a slight chance that they really are open DNS servers, this is very unlikely. Open DNS servers increase the chances of cache poisoning, can degrade performance of your DNS, and can cause your DNS servers to be used in an attack, so it is imperative that externally facing DNS servers do not recursively answer queries.
PASS	All nameservers authoritative	All nameservers answered authoritatively for the zone. This indicates that the zones for this domain are set up correctly on your nameservers and that we should be able to get good responses to further queries.

### SOA

Status	Test Name	Information
FAIL	SOA record check	No nameservers provided an SOA record for the zone. You should configure your nameservers to have a master slave relationship. The update of the zone information to the slave nameservers should be handled through the SOA record.

### MX

Status	Test Name	Information
FAIL	MX records check	No MX records exist within the zone. This is legal, but if you want to receive E-mail on this domain, you should have MX record(s). The program can't continue in a case like this, so we are assuming you don't receive mail on this domain.

### WWW

Status	Test Name	Information
PASS	WWW record check	Domain has a WWW hostname.  www.sedayu.net.   104.24.105.126   300 www.sedayu.net.   104.24.104.126   300 www.sedayu.net.   172.67.195.213   300
INFO	Domain record	The domain literal has no address records.
PASS	IP Address(es) valid	All addresses are public. If there were any private IPs, they would not be reachable, causing problems reaching your web site.
PASS	WWW enabled	We connected to WWW, the title data found is:  104.24.105.126 : 301 Moved 104.24.104.126 : 301 Moved 172.67.195.213 : 301 Moved
INFO	SSL enabled	SSL is not enabled. This is ok, but if your website offers online shopping or other private services, you should acquire an SSL cert and enable SSL. SSL will encrypt the data communication between your site and customers, helping to prevent private data from being intercepted and read.



# Tugas

Lakukan testing DNS pada salah satu web anda atau web lain yang anda pilih dengan :

1. Open DNS Cache Check
2. DNSSTUFF
3. dnschecker.org

Tuliskan hasil dan tampilannya serta berikan kesimpulan.



# Bahan Bacaan

- Chris Gonyea, DNS: Why It's Important & How It Works, <http://dyn.com/blog/dns-why-its-important-how-it-works> di akses 31 Mei 2017
- Vangie Beal, DNS, <http://www.webopedia.com/TERM/D/DNS.html> di akses 31 Mei 2017
- Managing Domain Name Servers : What Is A Domain Name Server (DNS) And How Does It Work, <http://www.networksolutions.com/support/what-is-a-domain-name-server-dns-and-how-does-it-work/>
- Apa itu Redirect DNS Resolver, <https://www.idreg.net/apa-itu-redirect-dns-resolver/>
- Seting DNS Server, <https://pemula.linux.or.id/admin/setting-dns-server.html>

