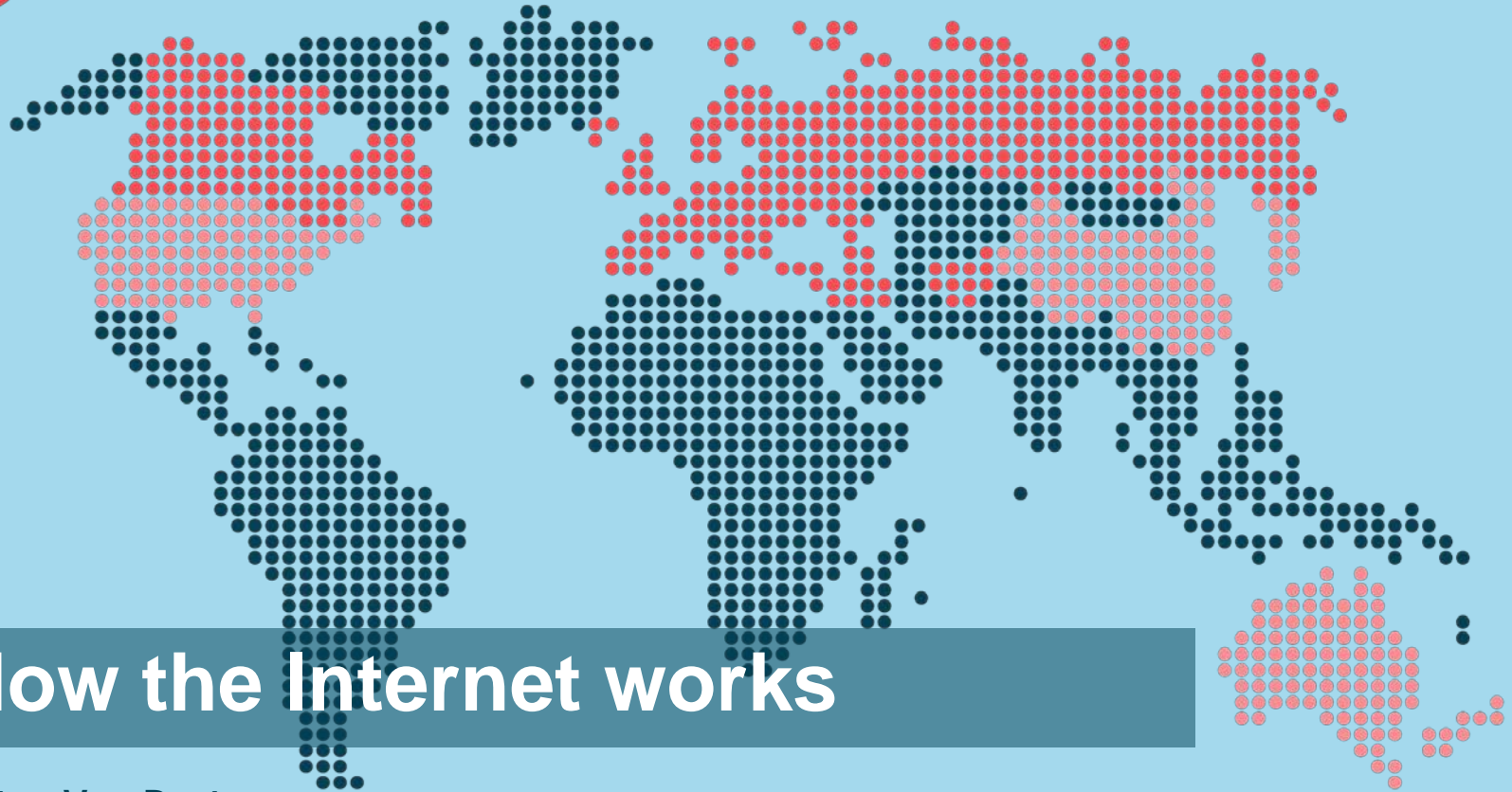




Council of European National
Top-Level Domain Registries



How the Internet works

Peter Van Roste

peter@centr.org

European Parliament - Brussels, Belgium

10 November 2016



The association for exchange, dialogue and innovation of country code domain registries in Europe

CENTR community

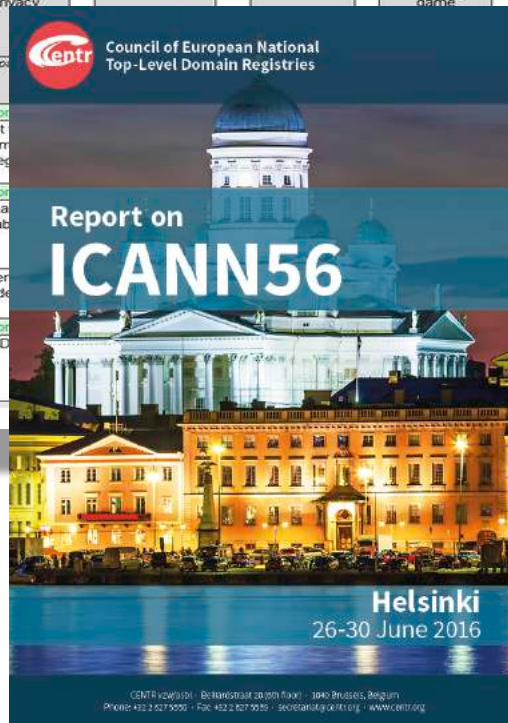
- 53 full members (ccTLDs), 9 associate members and 12 observers
- 50% of country code domain name registrations worldwide
- More than 70 million registrations

Member services

- Dialogue platform via working groups, general assemblies, mailing lists
- Best practice and knowledge sharing
- Policy, news, statistics and industry analysis
- A voice for ccTLDs in the region and the wider Internet community



Council of European National Top-Level Domain Registries





What will you learn today?

- What the Internet really looks like (it's not a cloud)
- What IP addresses are
- How they connect to each other
- How networks work
- How the domain name system (DNS) works
- Why the root is important and why IANA matters
- Who does what in the technical layers of the Internet
- Why this all matters for the Internet Governance discussions



Lately in the news

The screenshot shows the ZDNet website interface. At the top, there's a search bar and navigation links like News, Blogs, Livres blancs, 4G Monitor, Speedtest, Progiciels, and Carrières IT. A red navigation bar contains links for FR, Windows 10, 4G, Sécurité, DevOps, PC et métiers, Transfo Numérique, Avenir de l'IT, Chiffres clés IT, and Partenaires. The main banner features the text "LET THE TRANSFORMATION BEGIN" and "PARIS" with a date "MARDI 22 NOVEMBRE - Carrousel du Louvre" and a "Je m'inscris" button. Below this is a yellow banner for "ZDNET.FR SUR LINKEDIN : Rejoignez le Club des professionnels et décideurs de l'IT". The main article is titled "Google down : Orange bloque et redirige par erreur ses internautes vers le ministère de l'Intérieur [MAJ]" and is dated "MARDI 22 NOVEMBRE Carrousel du Louvre". The article text states: "Réseaux : Depuis ce matin, les abonnés de chez Orange qui souhaitent se rendre sur le site de Google, de Wikipedia ou encore d'OVH rencontrent des difficultés. Certains utilisateurs se sont même vu servir une page du ministère de l'Intérieur, signalant le blocage administratif d'un site. Une erreur de DNS est en cause." To the right of the article is a sidebar with a "Hewlett Packard Enterprise Avenir de l'IT" section and a "publicité" section featuring a smaller version of the "PARIS" banner. At the bottom, there's a footer with the ZDNet logo, the text "Par La rédaction de ZDNet.fr | Lundi 17 Octobre 2016", a "Suivre @zdnnetfr" button, and a section titled "A la une de ZDNet" with links for "Dernières news" and "Les plus lues".

Recherchez sur ZDNet

News Blogs Livres blancs 4G Monitor Speedtest Progiciels Carrières IT Se connecter | Devenir membre

FR Windows 10 4G Sécurité DevOps PC et métiers Transfo Numérique Avenir de l'IT Chiffres clés IT Partenaires

LET THE TRANSFORMATION BEGIN PARIS MARDI 22 NOVEMBRE - Carrousel du Louvre Je m'inscris

#DellEMCForum *Que la transformation commence

ZDNET.FR SUR LINKEDIN : Rejoignez le Club des professionnels et décideurs de l'IT

ZDNet.fr > News > Google down : Orange bloque et redirige par erreur ses internautes vers le ministère de l'Intérieur [MAJ] >

Google down : Orange bloque et redirige par erreur ses internautes vers le ministère de l'Intérieur [MAJ]

MARDI 22 NOVEMBRE Carrousel du Louvre Je m'inscris

Réseaux : Depuis ce matin, les abonnés de chez Orange qui souhaitent se rendre sur le site de Google, de Wikipedia ou encore d'OVH rencontrent des difficultés. Certains utilisateurs se sont même vu servir une page du ministère de l'Intérieur, signalant le blocage administratif d'un site. Une erreur de DNS est en cause.

Par La rédaction de ZDNet.fr | Lundi 17 Octobre 2016

Suivre @zdnnetfr

Avenir de l'IT Hewlett Packard Enterprise

publicité

LET THE TRANSFORMATION BEGIN PARIS MARDI 22 NOVEMBRE Carrousel du Louvre Je m'inscris

#DellEMCForum Dell EMC Forum *Que la transformation commence

A la une de ZDNet

Dernières news Les plus lues



Lately in the news

Krebs on Security

In-depth security news and investigation



BLOG ADVERTISING

ABOUT THE AUTHOR

21 Hacked Cameras, DVRs Powered Today's Massive Internet Outage

OCT 16

A massive and sustained Internet attack that has caused outages and network congestion today for a large number of Web sites was launched with the help of hacked "Internet of Things" (IoT) devices, such as CCTV video cameras and digital video recorders, new data suggests.

Earlier today cyber criminals began training their attack cannons on **Dyn**, an Internet infrastructure company that provides critical technology services to some of the Internet's top destinations. The attack began creating problems for Internet users reaching an array of sites, including Twitter, Amazon, Tumblr, Reddit, Spotify and Netflix.



Advertisement


 + 

**Good by themselves.
Better together.**

SIEM + Threat Intelligence

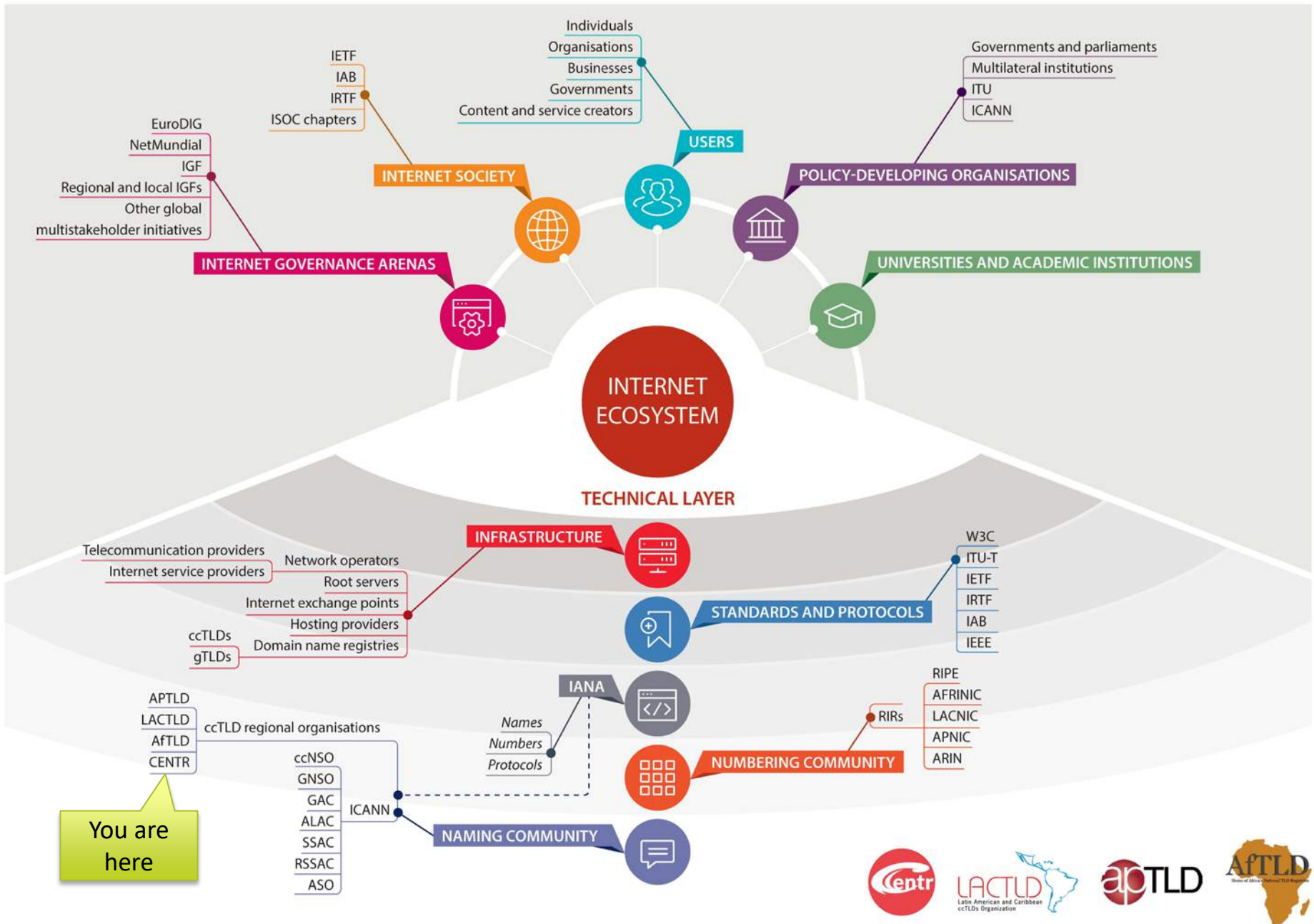
DOWNLOAD WHITE PAPER

 **THREATCONNECT**



My New Book!

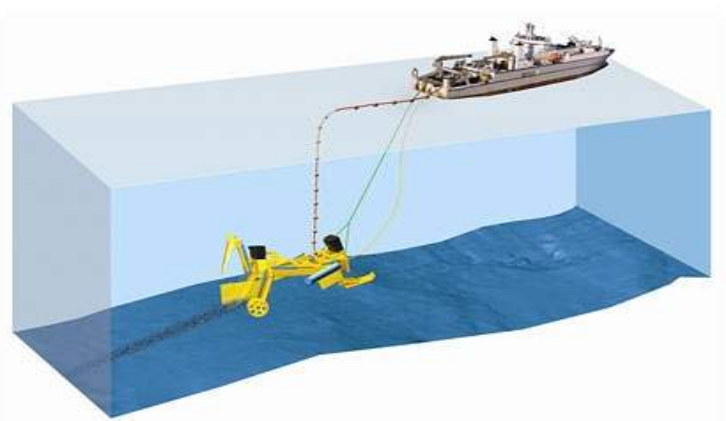
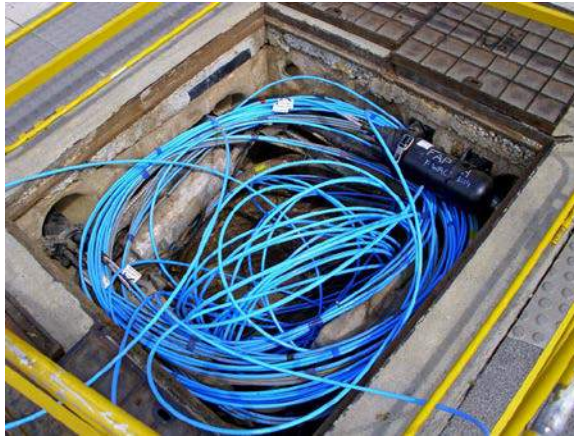


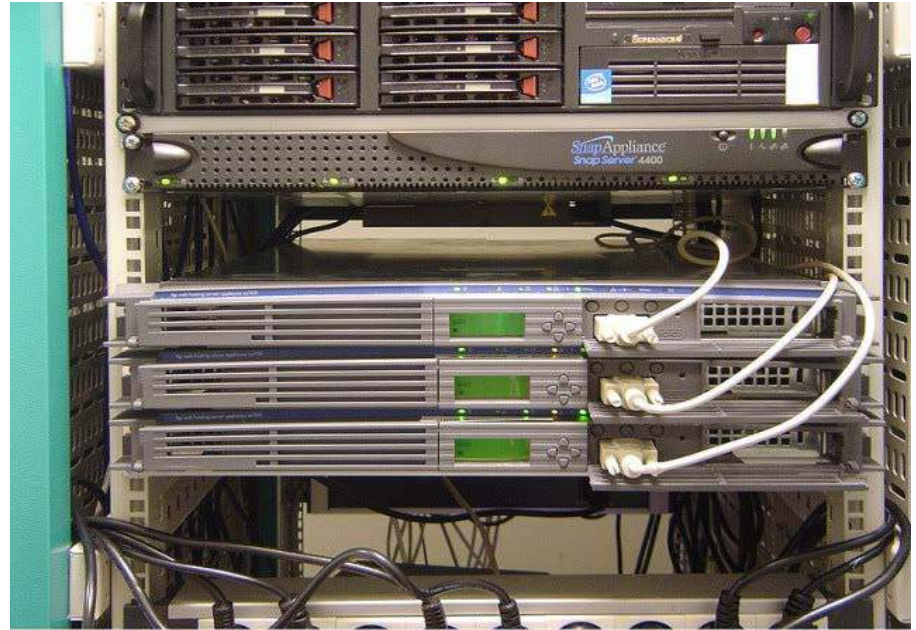




The Internet is built with carrots





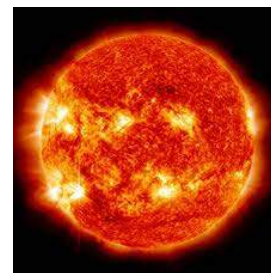


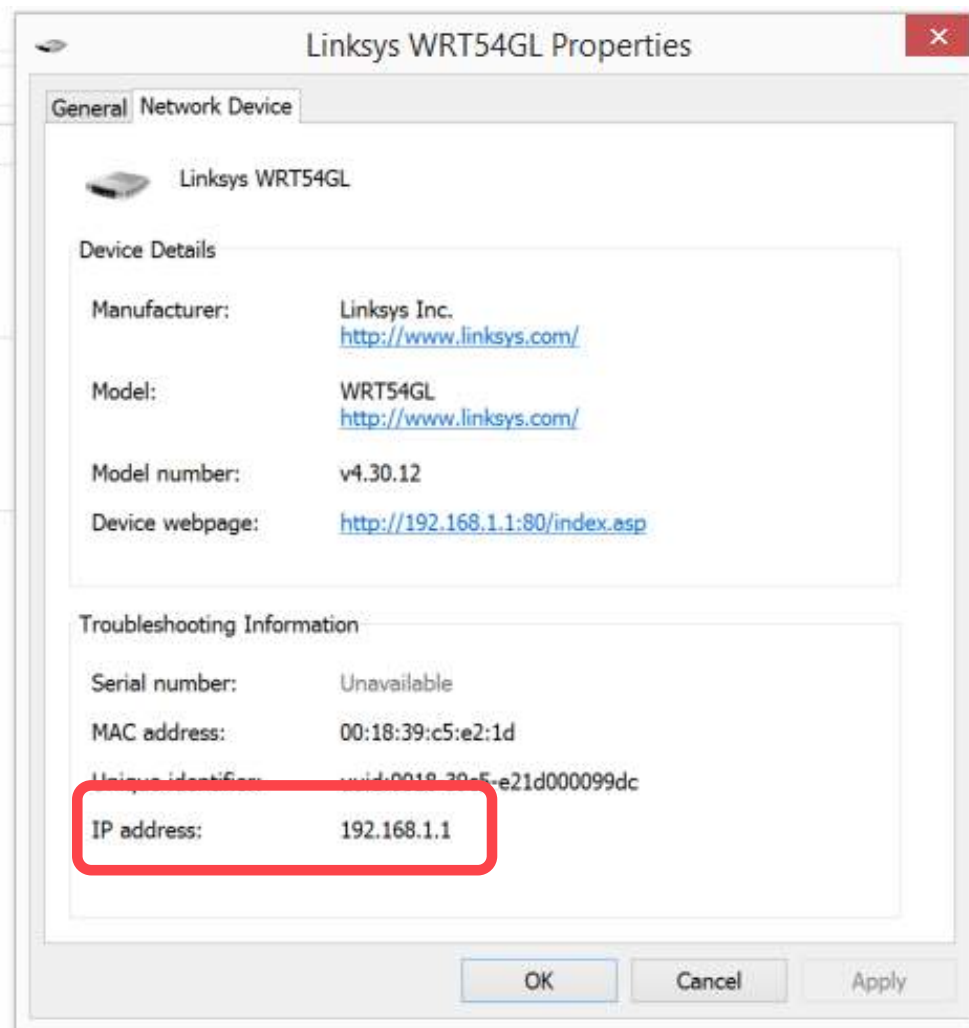
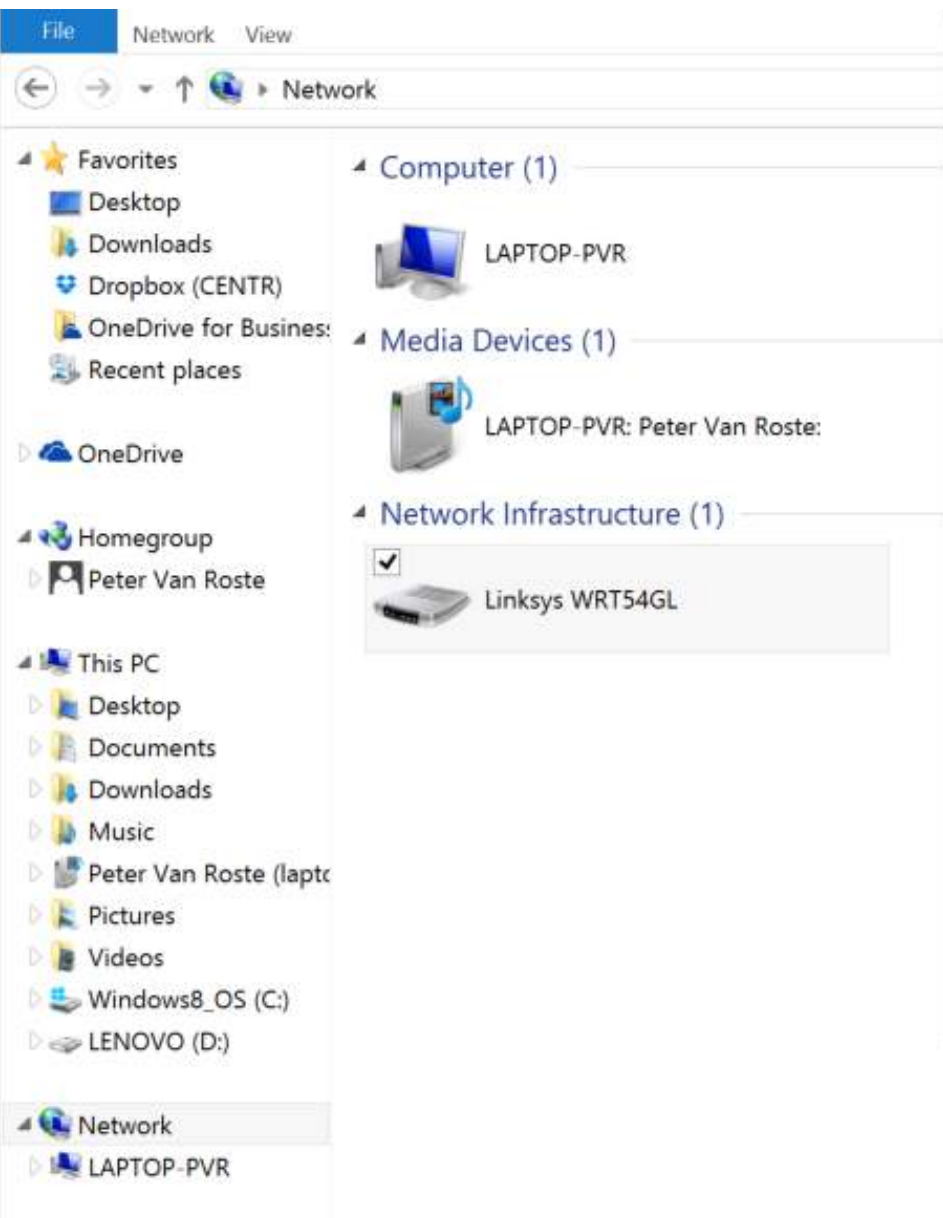
Every single device connected to the internet requires an IP address.
Not always unique though...

- IANA manages the global pool of IP addresses
- IANA hands large blocks to each region
- RIPE NCC for Europe
- RIPE NCC gives them to its members
 - ISPs
 - Mobile operators
 - Research institutions
- IP addresses can be
 - Static
 - Dynamic (consumers)

IP addresses – IPv4 vs. IPv6

	IPv4	IPv6
Format	91.198.174.2	3ffe:6a88:85a3:08d3:1319:8a2e:0370:7344
Benefits	All equipment compatible	More secure Better routing – more stability IPv4 is running out due to enormous increase in IP address consumption
Range	4×10^9	$3,4 \times 10^{38}$







**Council of European National
Top-Level Domain Registries**

Home About Education Library News Events Statistics Policy



MEMBERS' AREA →

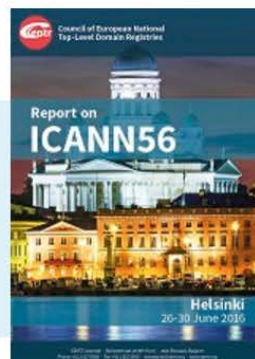
The association for exchange, dialogue and innovation of country code domain registries in Europe

SEE OUR MEMBERS →

Highlights

CENTR Report on ICANN56

VIEW →

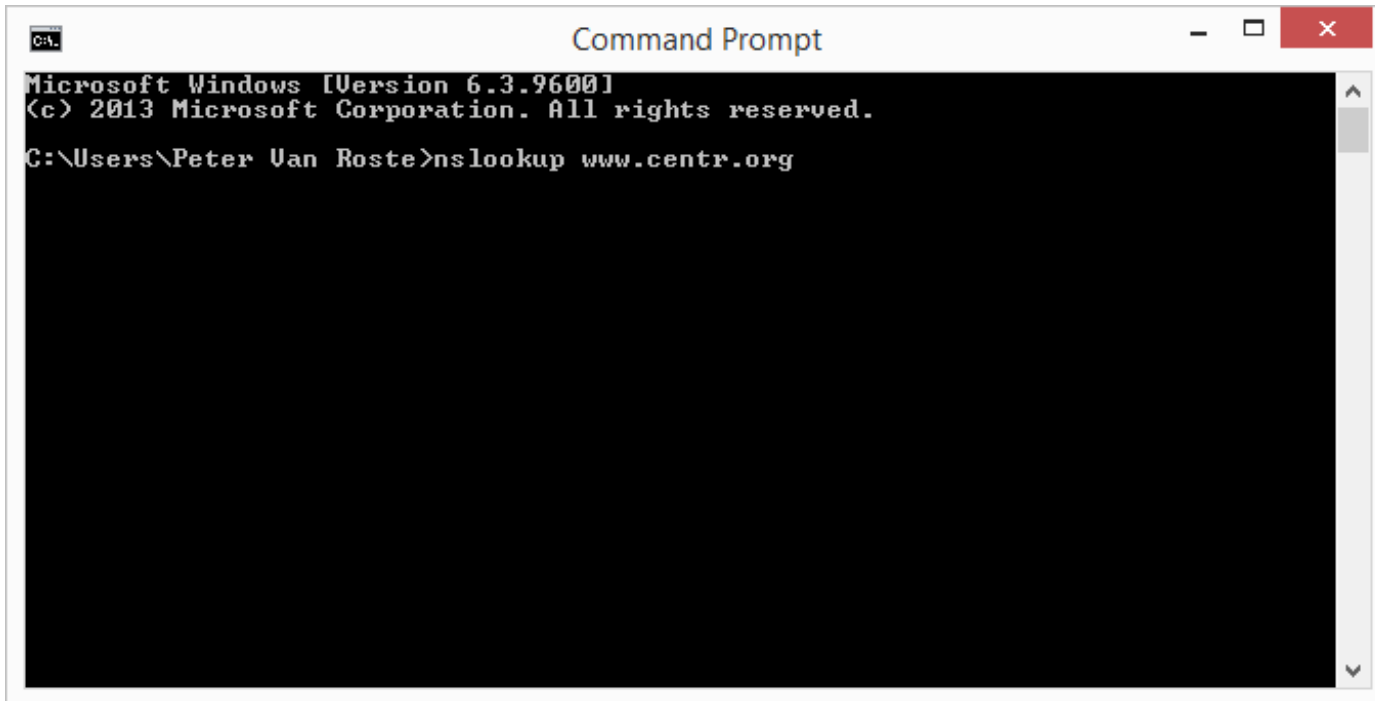


About CENTR

CENTR is the association of European country code top-level domain name registries. CENTR's main purpose is to provide its members with a forum for exchange of information

Tip 1

IP addresses of websites can be found
by using the NSLOOKUP command



```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>nslookup www.centri.org
```


Microsoft Windows [Version 10.0.10586]
(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>nslookup www.centra.org
Server: roes01.dnsresv6.prd.telenet-ops.be
Address: 2a02:1800:100::45:1

Non-authoritative answer:

Name: www.centra.org

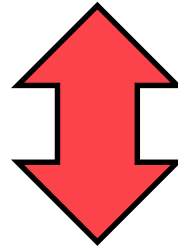
Addresses: 2a02:d08:1002:321:370:7216:3083:1
37.72.163.83

C:\Users\Peter Van Roste>



Linksys WRT54GL

IP address: 192.168.1.1



Name: www.centri.org

Addresses: 2a02:d08:1002:321:370:7216:3083:1
37.72.163.83

The screenshot shows the homepage of the CENTR (Council of European National Top-Level Domain Registries) website. The header includes the CENTR logo and navigation links: Home, About, Education, Library, News, Events, Statistics, Policy. A world map highlights European countries. The main heading reads: "The association for exchange, dialogue and innovation of country code domain registries in Europe". Below this is a "SEE OUR MEMBERS" link. The "Highlights" section features a "CENTR Report on ICANN56" with a "VIEW" button. The "News" section mentions "Nordic Domain Days to be held on 17-18 January 2017". The "About CENTR" section describes the association's purpose and includes a "LEARN MORE" link.

North America (ARIN)

Europe (RIPE)

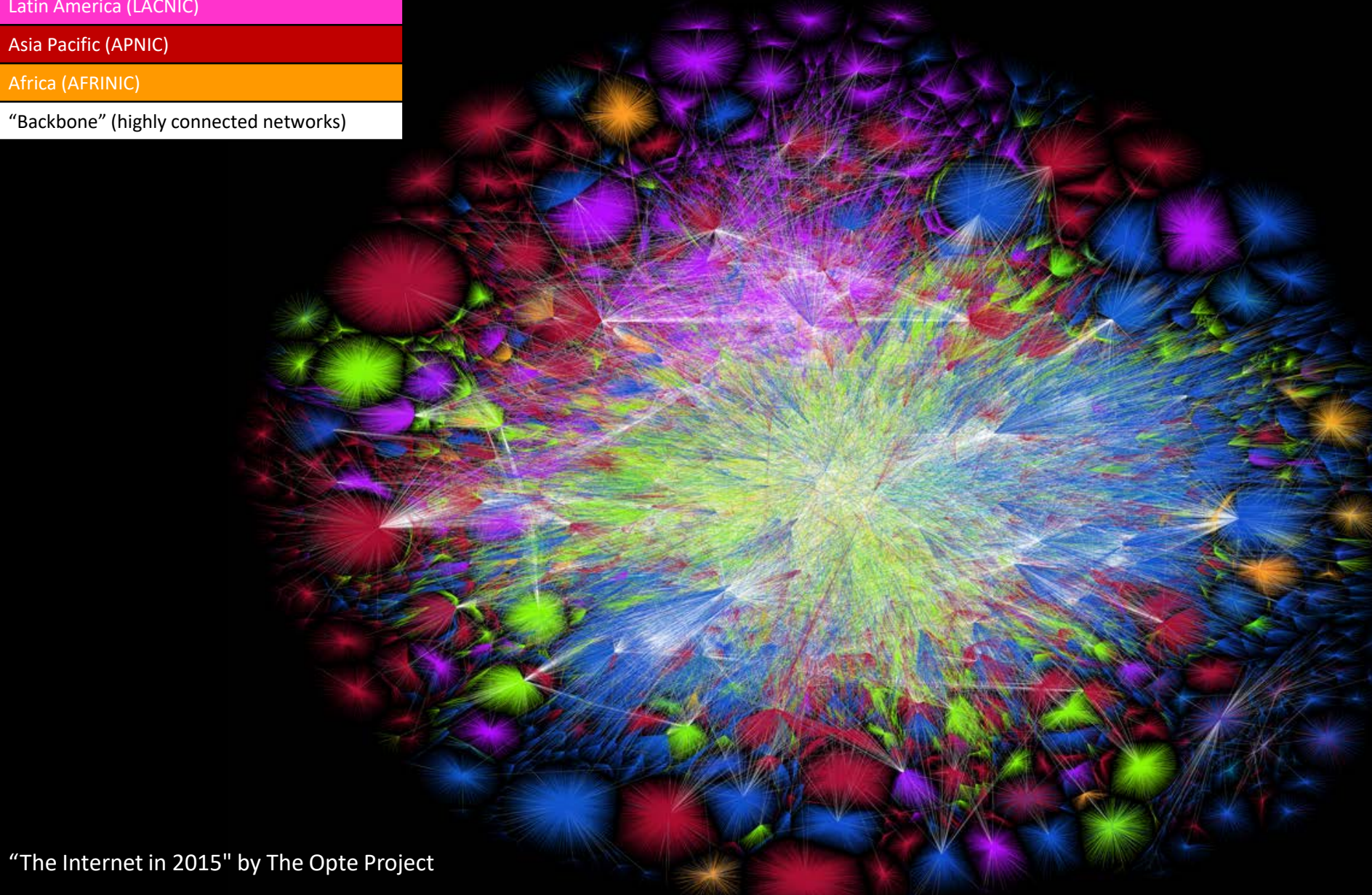
Latin America (LACNIC)

Asia Pacific (APNIC)

Africa (AFRINIC)

"Backbone" (highly connected networks)

"The Internet in 2015" by The Opte Project





DE-CIX



DE-CIX



DE-CIX



Tip 2

To see a potential route between your pc and the device you want to reach, use the *TRACERT* command in command prompt.

(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

Tracing route to www.centri.org [37.72.163.83]
over a maximum of 30 hops:

1	5 ms	2 ms	3 ms	192.168.254.1
2	5 ms	3 ms	3 ms	192.168.250.1
3	110 ms	22 ms	150 ms	172.22.194.73
4	19 ms	18 ms	18 ms	71.246-183-91.adsl-static.isp.belgacom.be [91.183.246.71]
5	24 ms	30 ms	20 ms	70.246-183-91.adsl-static.isp.belgacom.be [91.183.246.70]
6	22 ms	21 ms	20 ms	ae-21-1000.ibrstr6.isp.belgacom.be [91.183.246.106]
7	22 ms	19 ms	26 ms	telenet3.bnix.net [194.53.172.64]
8	27 ms	22 ms	24 ms	dD5E0FA70.access.telenet.be [213.224.250.112]
9	23 ms	23 ms	23 ms	dD5E0F6F5.access.telenet.be [213.224.246.245]
10	24 ms	23 ms	23 ms	dD5E0FDAA.access.telenet.be [213.224.253.170]
11	23 ms	22 ms	23 ms	dD5E0301A.access.telenet.be [213.224.48.26]
12	25 ms	23 ms	23 ms	ve300.cs1.dcg.as30961.net [88.151.241.250]
13	31 ms	29 ms	22 ms	web-003.karakas.openminds.be [37.72.163.83]

Trace complete.

C:\Users\Peter Van Roste>

(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

Tracing route to www.centri.org [37.72.163.83]
over a maximum of 30 hops:

1	5 ms	2 ms	3 ms	192.168.254.1
2	5 ms	3 ms	3 ms	192.168.250.1
3	110 ms	22 ms	150 ms	172.22.194.73
4	19 ms	18 ms	18 ms	71.246-183-91.adsl-static.isp.belgacom.be [91.183.246.71]
5	24 ms	30 ms	20 ms	70.246-183-91.adsl-static.isp.belgacom.be [91.183.246.70]
6	22 ms	21 ms	20 ms	ae-21-1000.ibrstr6.isp.belgacom.be [91.183.246.106]
7	22 ms	19 ms	26 ms	telenet3.bnix.net [194.53.172.64]
8	27 ms	22 ms	24 ms	dD5E0FA70.access.telenet.be [213.224.250.112]
9	23 ms	23 ms	23 ms	dD5E0F6F5.access.telenet.be [213.224.246.245]
10	24 ms	23 ms	23 ms	dD5E0FDAA.access.telenet.be [213.224.253.170]
11	23 ms	22 ms	23 ms	dD5E0301A.access.telenet.be [213.224.48.26]
12	25 ms	23 ms	23 ms	ve300.cs1.dcg.as30961.net [88.151.241.250]
13	31 ms	29 ms	22 ms	web-003.karakas.openminds.be [37.72.163.83]

Trace complete.

C:\Users\Peter Van Roste>

(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

Tracing route to www.centri.org [37.72.163.83]
over a maximum of 30 hops:

1	5 ms	2 ms	3 ms	192.168.254.1
2	5 ms	3 ms	3 ms	192.168.250.1
3	110 ms	22 ms	150 ms	172.22.194.75
4	19 ms	18 ms	18 ms	71.246-183-91.adsl-static.isp.belgacom.be [91.183.246.71]
5	24 ms	30 ms	20 ms	70.246-183-91.adsl-static.isp.belgacom.be [91.183.246.70]
6	22 ms	21 ms	20 ms	ae-21-1000.ibrstr6.isp.belgacom.be [91.183.246.106]
7	22 ms	19 ms	26 ms	telenet3.onix.net [194.53.172.64]
8	27 ms	22 ms	24 ms	dD5E0FA70.access.telenet.be [213.224.250.112]
9	23 ms	23 ms	23 ms	dD5E0F6F5.access.telenet.be [213.224.246.245]
10	24 ms	23 ms	23 ms	dD5E0FDAA.access.telenet.be [213.224.253.170]
11	23 ms	22 ms	23 ms	dD5E0301A.access.telenet.be [213.224.48.26]
12	25 ms	23 ms	23 ms	ve300.cs1.dcg.as30961.net [88.151.241.250]
13	31 ms	29 ms	22 ms	web-003.karakas.openminds.be [37.72.163.83]

Trace complete.

C:\Users\Peter Van Roste>

(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

Tracing route to www.centri.org [37.72.163.83]
over a maximum of 30 hops:

1	5 ms	2 ms	3 ms	192.168.254.1
2	5 ms	3 ms	3 ms	192.168.250.1
3	110 ms	22 ms	150 ms	172.22.194.73
4	19 ms	18 ms	18 ms	71.246-183-91.adsl-static.isp.belgacom.be [91.183.246.71]
5	24 ms	30 ms	20 ms	70.246-183-91.adsl-static.isp.belgacom.be [91.183.246.70]
6	22 ms	21 ms	20 ms	de-21-1000-101stro.isp.belgacom.be [91.183.245.106]
7	22 ms	19 ms	26 ms	telenet3.bnix.net [194.53.172.64]
8	27 ms	22 ms	24 ms	dD5E0FA70.access.telenet.be [213.224.250.112]
9	23 ms	23 ms	23 ms	dD5E0F6F5.access.telenet.be [213.224.246.245]
10	24 ms	23 ms	23 ms	dD5E0FDAA.access.telenet.be [213.224.253.170]
11	23 ms	22 ms	23 ms	dD5E0301A.access.telenet.be [213.224.48.26]
12	25 ms	23 ms	23 ms	ve300.cs1.dcg.as30961.net [88.151.241.250]
13	31 ms	29 ms	22 ms	web-003.karakas.openminds.be [37.72.163.83]

Trace complete.

C:\Users\Peter Van Roste>

(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

Tracing route to www.centri.org [37.72.163.83]
over a maximum of 30 hops:

1	5 ms	2 ms	3 ms	192.168.254.1
2	5 ms	3 ms	3 ms	192.168.250.1
3	110 ms	22 ms	150 ms	172.22.194.73
4	19 ms	18 ms	18 ms	71.246-183-91.adsl-static.isp.belgacom.be [91.183.246.71]
5	24 ms	30 ms	20 ms	70.246-183-91.adsl-static.isp.belgacom.be [91.183.246.70]
6	22 ms	21 ms	20 ms	ae-21-1000.ibrstr6.isp.belgacom.be [91.183.246.106]
7	22 ms	19 ms	26 ms	telenet3.brnx.net [194.53.172.64]
8	27 ms	22 ms	24 ms	dD5E0FA70.access.telenet.be [213.224.250.112]
9	23 ms	23 ms	23 ms	dD5E0F6F5.access.telenet.be [213.224.246.245]
10	24 ms	23 ms	23 ms	dD5E0FDAA.access.telenet.be [213.224.253.170]
11	23 ms	22 ms	23 ms	dD5E03014.access.telenet.be [213.224.48.26]
12	25 ms	23 ms	23 ms	ve300.cs1.dcg.as30961.net [88.151.241.250]
13	31 ms	29 ms	22 ms	web-003.karakas.openminds.be [37.72.163.83]

Trace complete.

C:\Users\Peter Van Roste>

(c) 2015 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

Tracing route to www.centri.org [37.72.163.83]
over a maximum of 30 hops:

1	5 ms	2 ms	3 ms	192.168.254.1
2	5 ms	3 ms	3 ms	192.168.250.1
3	110 ms	22 ms	150 ms	172.22.194.73
4	19 ms	18 ms	18 ms	71.246-183-91.adsl-static.isp.belgacom.be [91.183.246.71]
5	24 ms	30 ms	20 ms	70.246-183-91.adsl-static.isp.belgacom.be [91.183.246.70]
6	22 ms	21 ms	20 ms	ae-21-1000.ibrstr6.isp.belgacom.be [91.183.246.106]
7	22 ms	19 ms	26 ms	telenet3.bnix.net [194.53.172.64]
8	27 ms	22 ms	24 ms	dD5E0FA70.access.telenet.be [213.224.250.112]
9	23 ms	23 ms	23 ms	dD5E0F6F5.access.telenet.be [213.224.246.245]
10	24 ms	23 ms	23 ms	dD5E0FDAA.access.telenet.be [213.224.253.170]
11	23 ms	22 ms	23 ms	dD5E0301A.access.telenet.be [213.224.48.26]
12	25 ms	23 ms	23 ms	ve300.cs1.dcg.as30961.net [88.151.241.250]
13	31 ms	29 ms	22 ms	web-003.karakas.openminds.be [37.72.163.83]

Trace complete.

C:\Users\Peter Van Roste>



Let's add the domain name system (DNS)

- Why do we need the DNS?
- How does it work?
- The Root
- The top-level domain



www.europa.eu

www.hyves.nl

www.allegro.pl

www.bbc.co.uk

blog.orange.fr

info@standaard.be

www.google.it

Why do we need the DNS?

There are three main reasons:

- Remembering addresses
- Flexibility (the underlying IP address/servers can change without any impact on the users)
- Security (Requests can be diverted to avoid server overload)

(And a fourth one)

- (Internet of Things [e.g. flood early warning system])



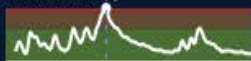
Smart cities



Live River Levels

PRE-RELEASE ALPHA - FOR EXPERIMENTAL PURPOSES ONLY

Godstow Lock



Minns Estate



New Botley



Wareham Stream



Osney Lock



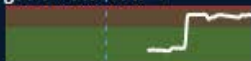
Hogacre Eastwyke



Hogacre Hinksey Stream



Hogacre Water Butt



Coldharbour



Iffley Lock



Sandford Lock



11:40 Dec 8 now

03:40 Jan 18

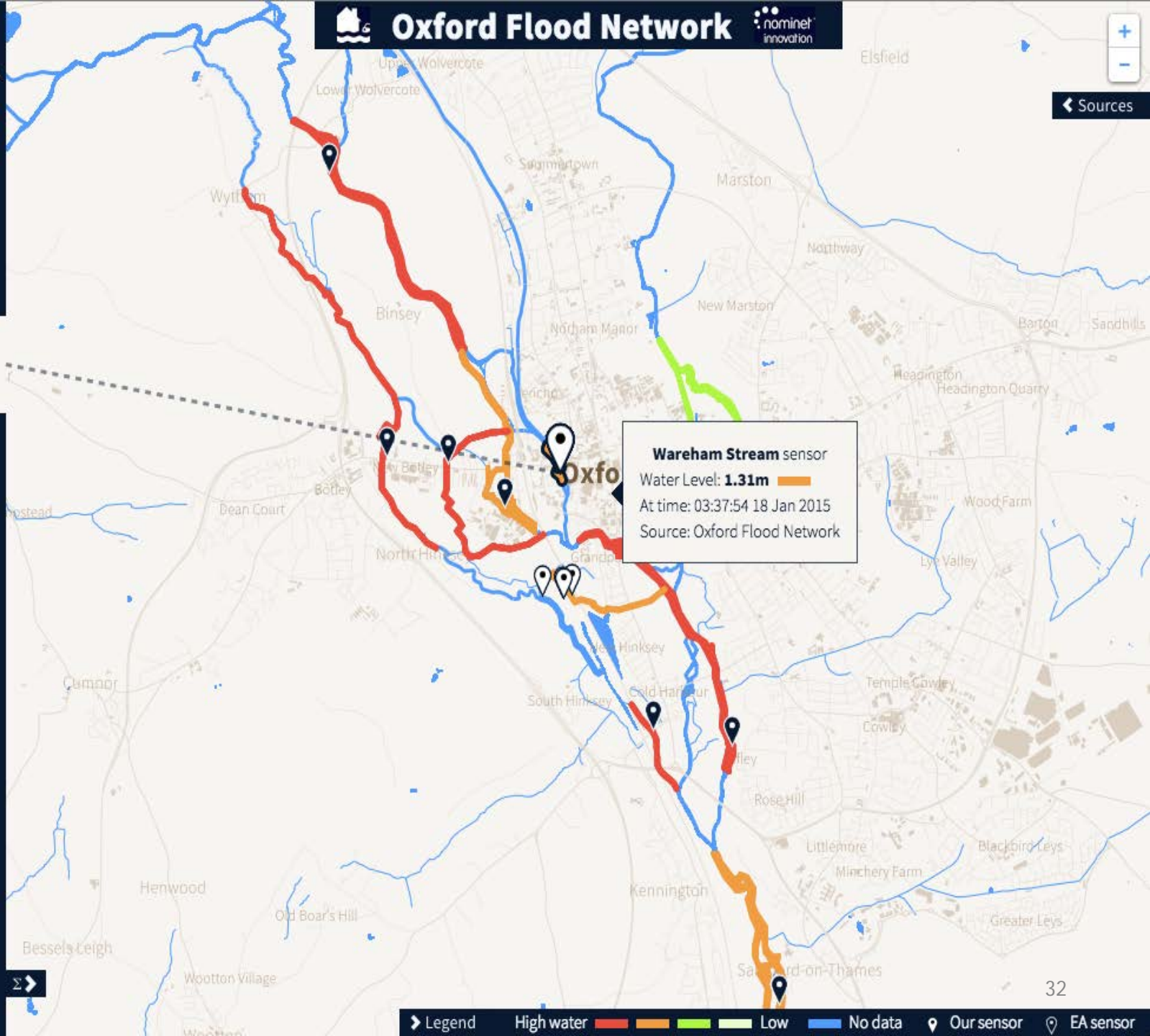


Oxford Flood Network

nominal innovation



← Sources



Legend

High water

Low

No data

Our sensor

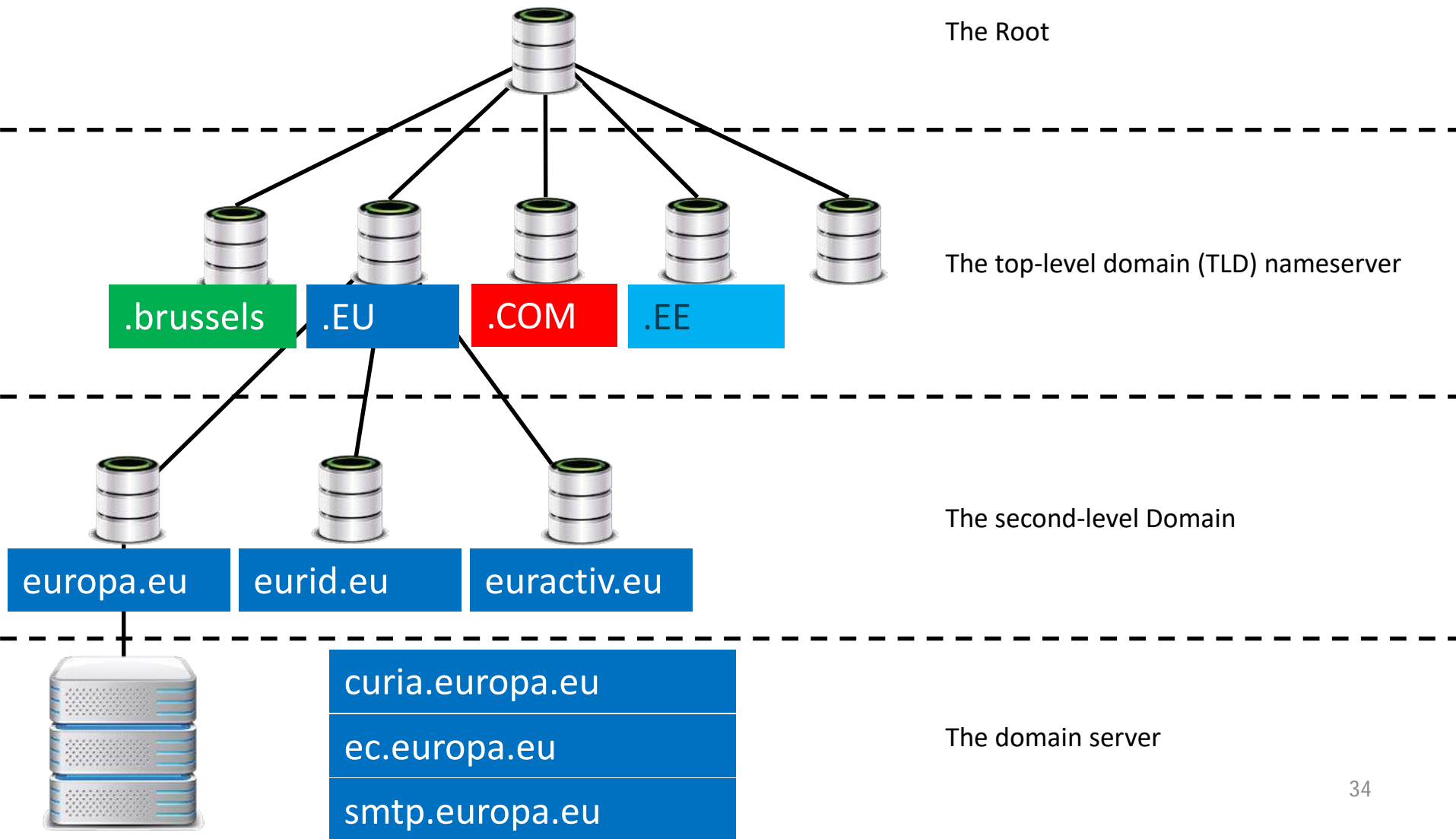
EA sensor

The DNS explained



<https://www.youtube.com/watch?v=vZ007Vi5HIM>

CENTR on YouTube: CENTR DNS





ROOTZONE

Rootzone Maintainer (IANA)

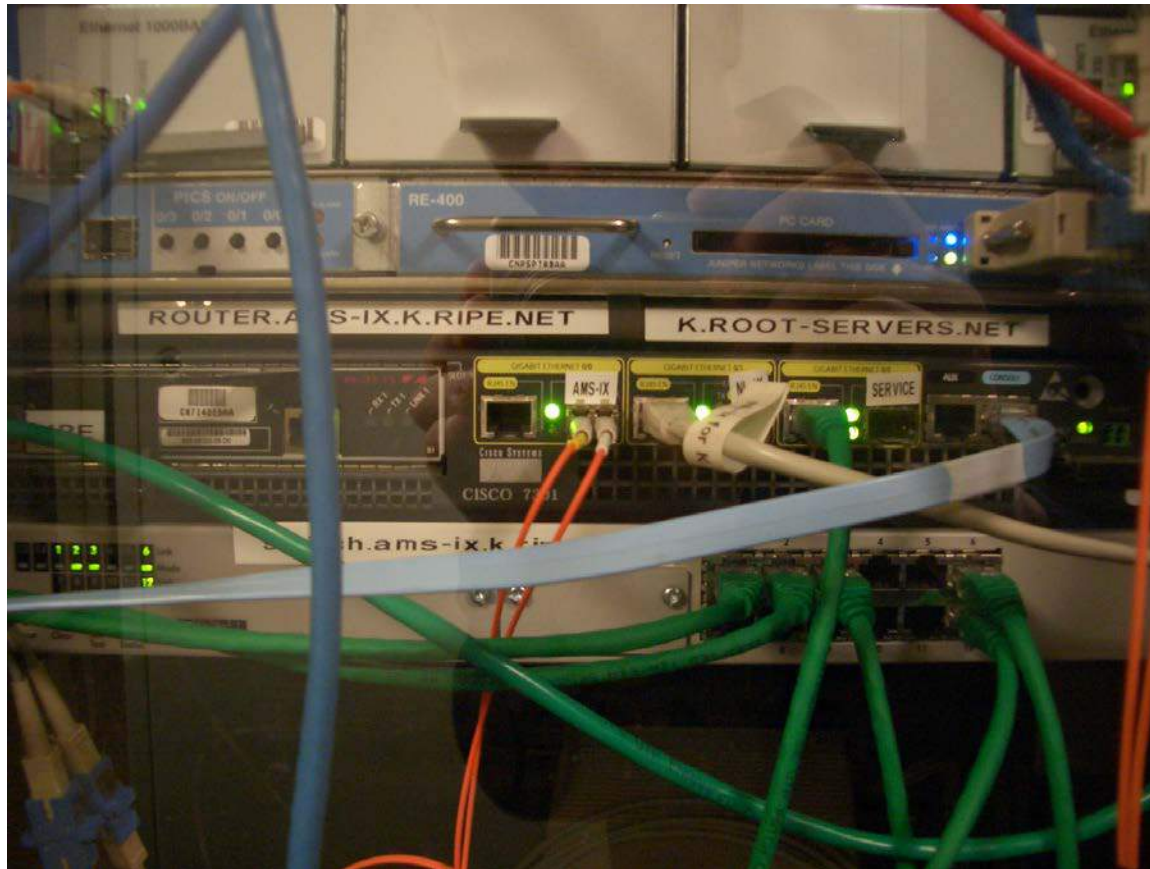
TLD ZONEFILE

TLD Registry (EURid)

DOMAIN

Domain Admin (Commission)

1. The Root



1. The Root

- IANA manages the root zone database
 - The root zone file is extracted from the root zone database
- The root zone file is hosted on 13 identical root servers, managed by different organisations (2 by EU orgs: RIPE & NetNod)
- Each of those 13 has many copies around the globe
- 4 of those copies are hosted in Brussels
- The US government (NTIA) no longer oversees the IANA function (transition occurred on 1 October 2016)



1. The Root - root zone file (root servers)

```

eu.                172800 IN      NS      x.dns.eu.
eu.                172800 IN      NS      y.dns.eu.
eu.                172800 IN      NS      cz.dns.eu.
eu.                172800 IN      NS      nl.dns.eu.
eu.                172800 IN      NS      si.dns.eu.
eu.                172800 IN      NS      uk.dns.eu.
EU.                86400 IN      DS      61179 7 1 87E2B3544884B45F36A0DA72DADCB0239C4D73D4
EU.                86400 IN      DS      61179 7 2 3B526BCC354AE085AD9984C9BE73D271411023EFF421EF184BCE41ACE3DE9F8B

EU.                86400 IN      RRSIG   DS 8 1 86400 20150411170000 20150401160000 48613 .
bCTz3iQYxp7pTGQI7hG3jjZiSuQ5pP3mkDbOI1QPRowjWtSnfp9caiovgI9Z49MN1bc8nWpbN6cVjB0HaswkHSOcJ0VMD6ZsXlIMNGtHPnWcBujayiGG2EdEaavBbUu
xH39zJcb1R73qZtzocbVAizuYRVlQEvTz6rg7RgXl/nE=

cz.dns.eu.         172800 IN      A       93.190.128.138
nl.dns.eu.         172800 IN      A       91.200.16.100
si.dns.eu.         172800 IN      A       193.2.221.60
si.dns.eu.         172800 IN      AAAA    2001:1470:8000:100:0:0:0:1
uk.dns.eu.         172800 IN      A       195.66.241.178
x.dns.eu.          172800 IN      A       194.0.1.19
x.dns.eu.          172800 IN      AAAA    2001:678:4:0:0:0:0:13
y.dns.eu.          172800 IN      A       194.146.106.90
y.dns.eu.          172800 IN      AAAA    2001:67c:1010:23:0:0:0:53
ns6.nominum.eu.    172800 IN      A       81.200.69.35

eu.                86400 IN      NSEC    eurovision. NS DS RRSIG NSEC

eu.                86400 IN      RRSIG   NSEC 8 1 86400 20150411170000 20150401160000 48613 .
Y2+jPipksunT5NSn9BGs6XUpOnfCFX8wlyWZug1+Hh4xrh3f+YzoHAMtm3maHqN/A2QwB+tWKxbQhLx9blR4vFaj2H8fEGOFs+P6e3X2IRRxYOcEkubx+v9QweLpSq
5yp5uA6OVpOUQ/phShZLDVVfCTbL0XbBacFeXTQFSLZjQ=

```

2. The top-level domains

- There are (currently) 1,532 top-level domains

ccTLDs	gTLDs
Country code top-level domains	Generic top level domains
2-letter ISO 3166-1 alpha-2 codes + IDN ccTLDs	1200-ish
ISO 3166 – 1 alpha 2 list Delegated based on IETF standard RFC 1591	Unrestricted but costly long ICANN process
Managed locally – serving the local internet community – funded by registration fees	Managed by independent operator under contract with ICANN – operator pays ICANN

Cyrrillic & Greek (overlaid on ccTLDs column)

.wine / .vin (overlaid on gTLDs column)



2. .eu WHOIS record for europa.eu

<https://whois.eurid.eu/en/>

TECHNICAL

Name

Proximus DNS Masters

NAME SERVERS

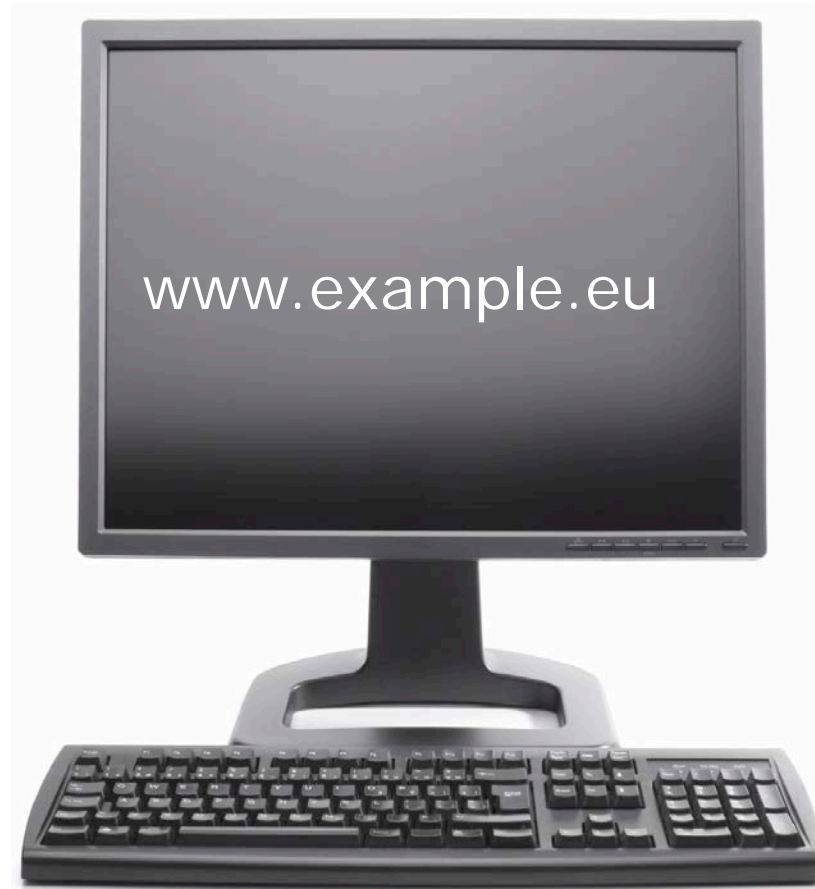
ns1bru.europa.eu	158.169.131.22
ns2eu.bt.net	
ns3bru.europa.eu	2a01:7080:14:101::2
ns2lux.europa.eu	158.169.9.30
ns1lux.europa.eu	158.169.9.11
ns2bru.europa.eu	158.169.131.32
ns1.be.colt.net	
ns1.bt.net	
ns3lux.europa.eu	2a01:7080:24:101::2

Fax

Email

friedrich.kloibhofer@ec.europa.eu

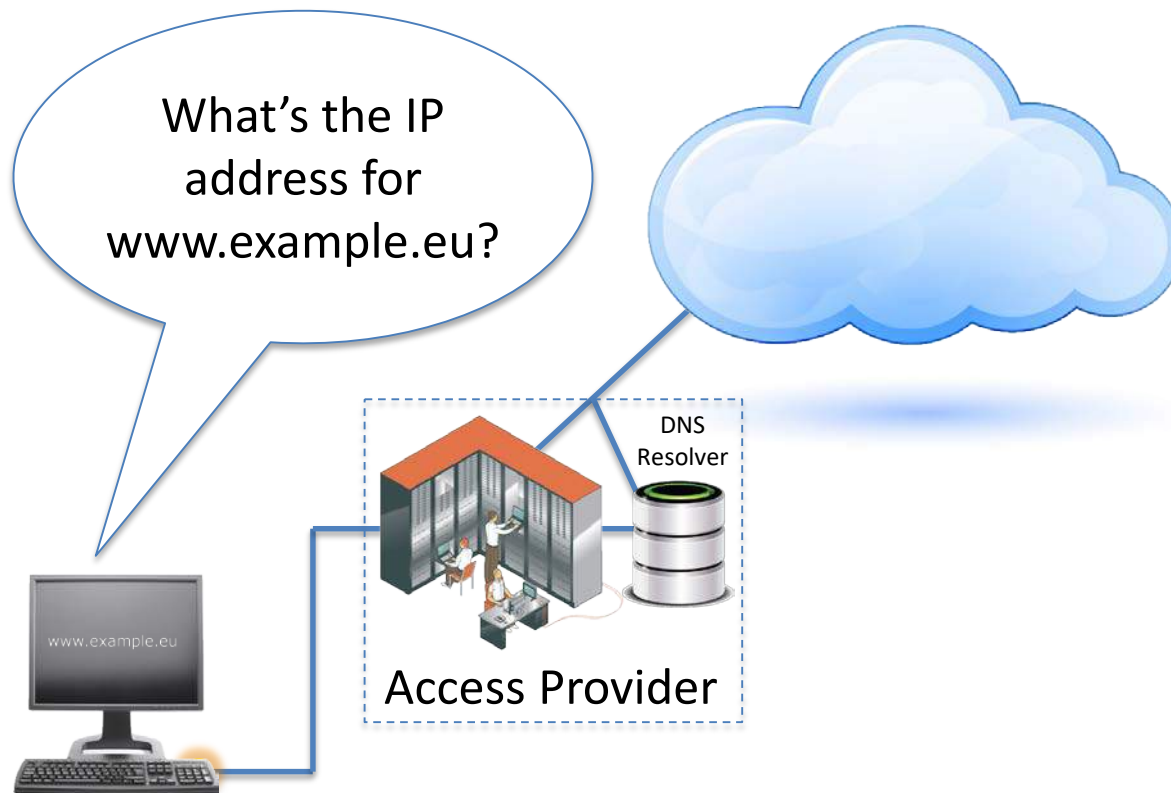
1. User types domain name into browser



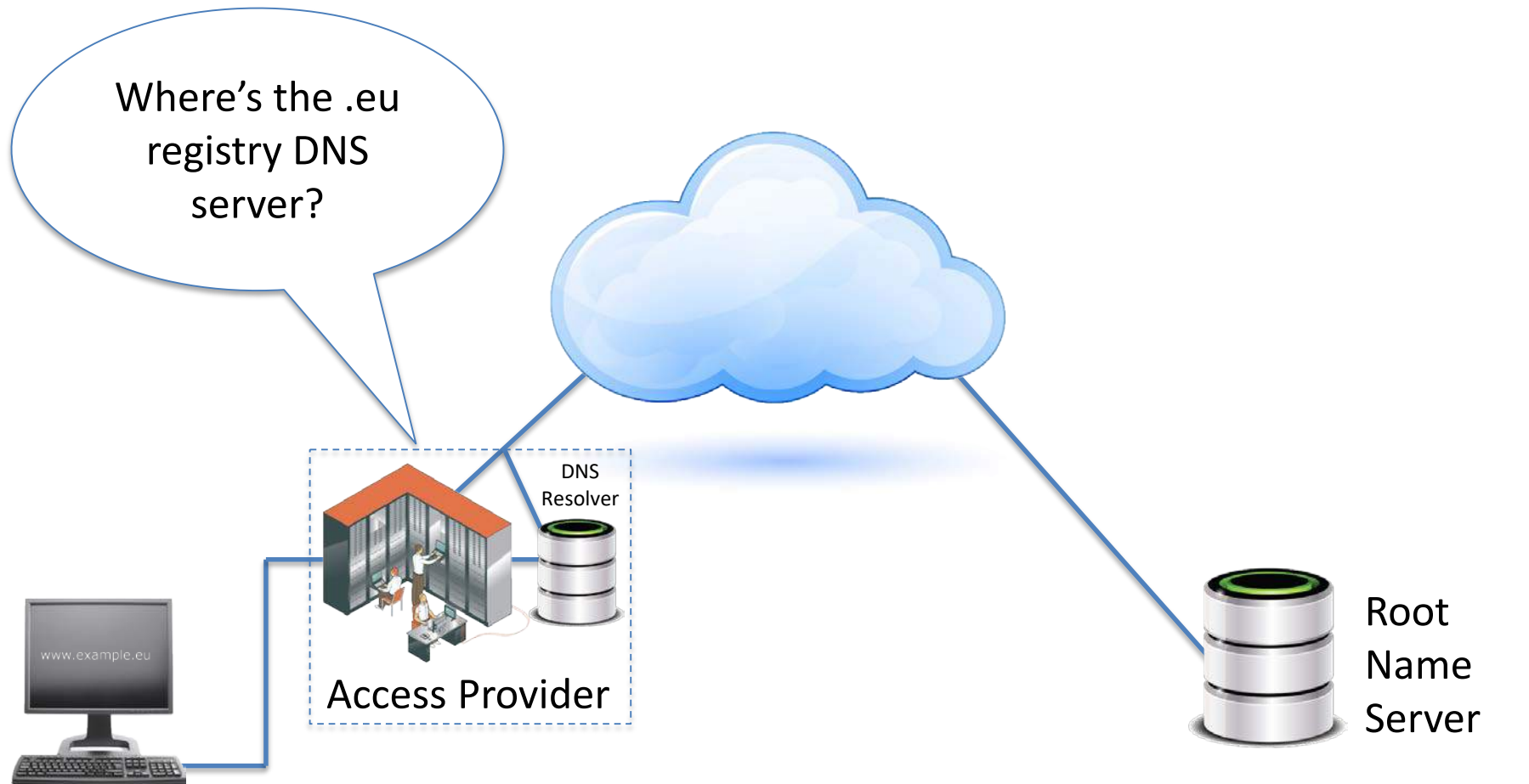
1. User types domain name into browser



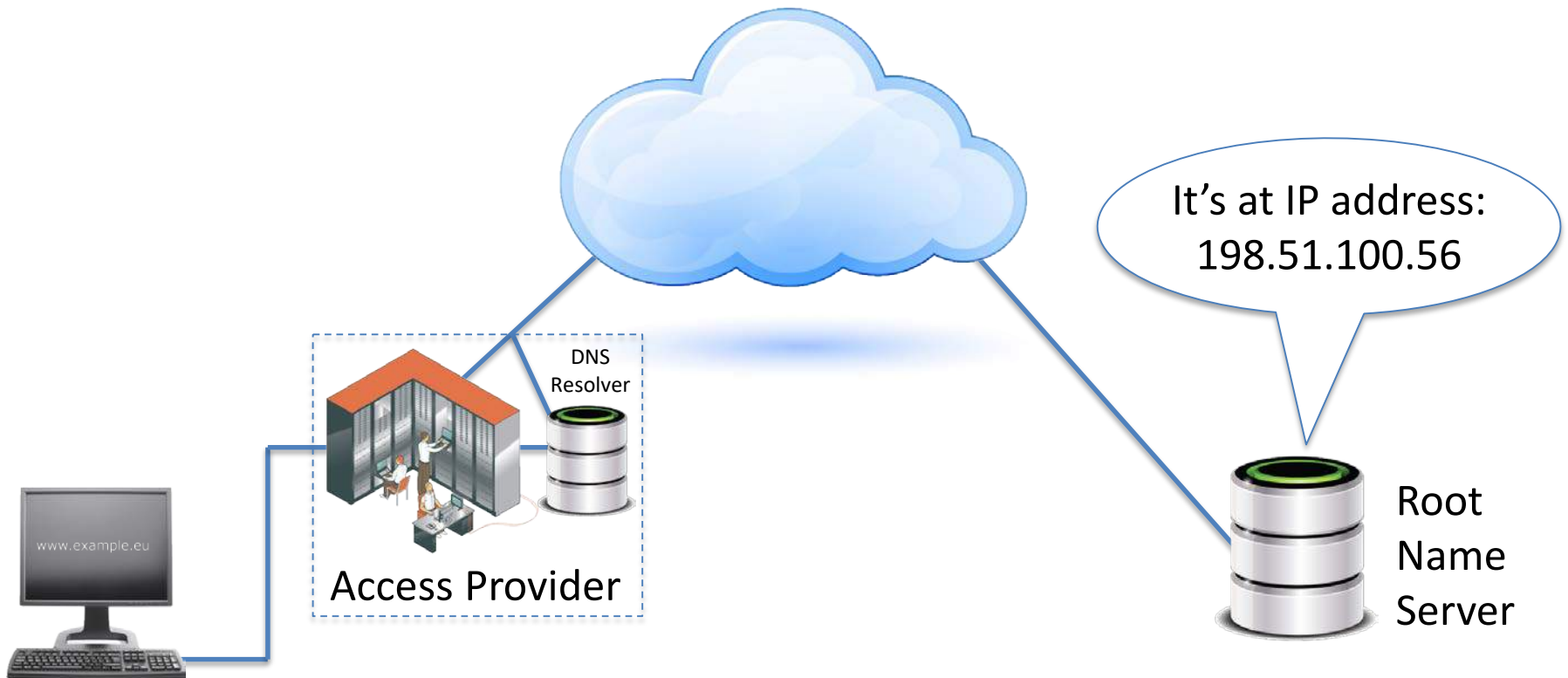
2. Browser asks Access Provider for IP address of `www.example.eu`



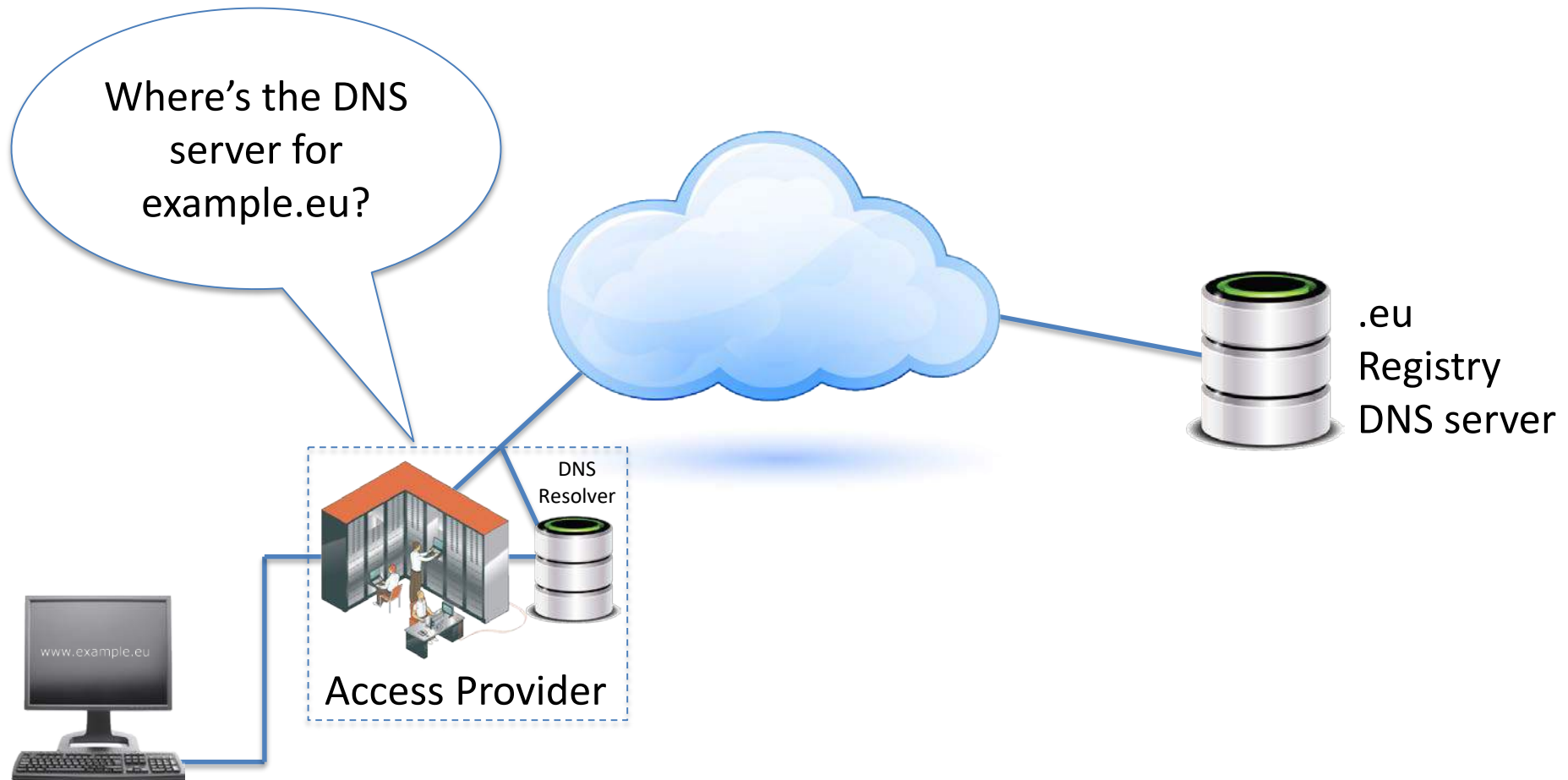
3. DNS Resolver asks Root Name Server for IP of a DNS server for .eu



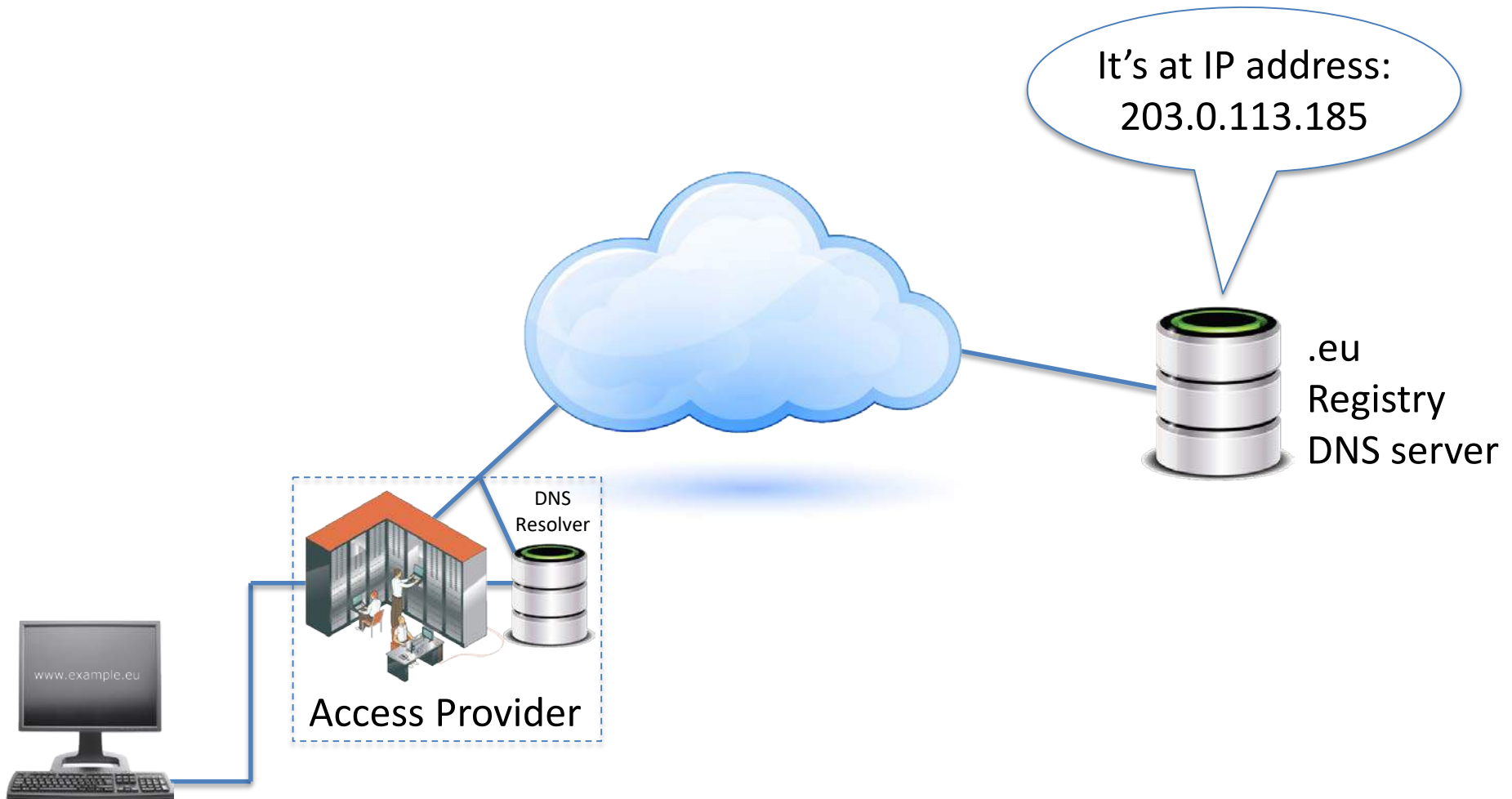
3. DNS Resolver asks Root Name Server for IP of a DNS server for .eu



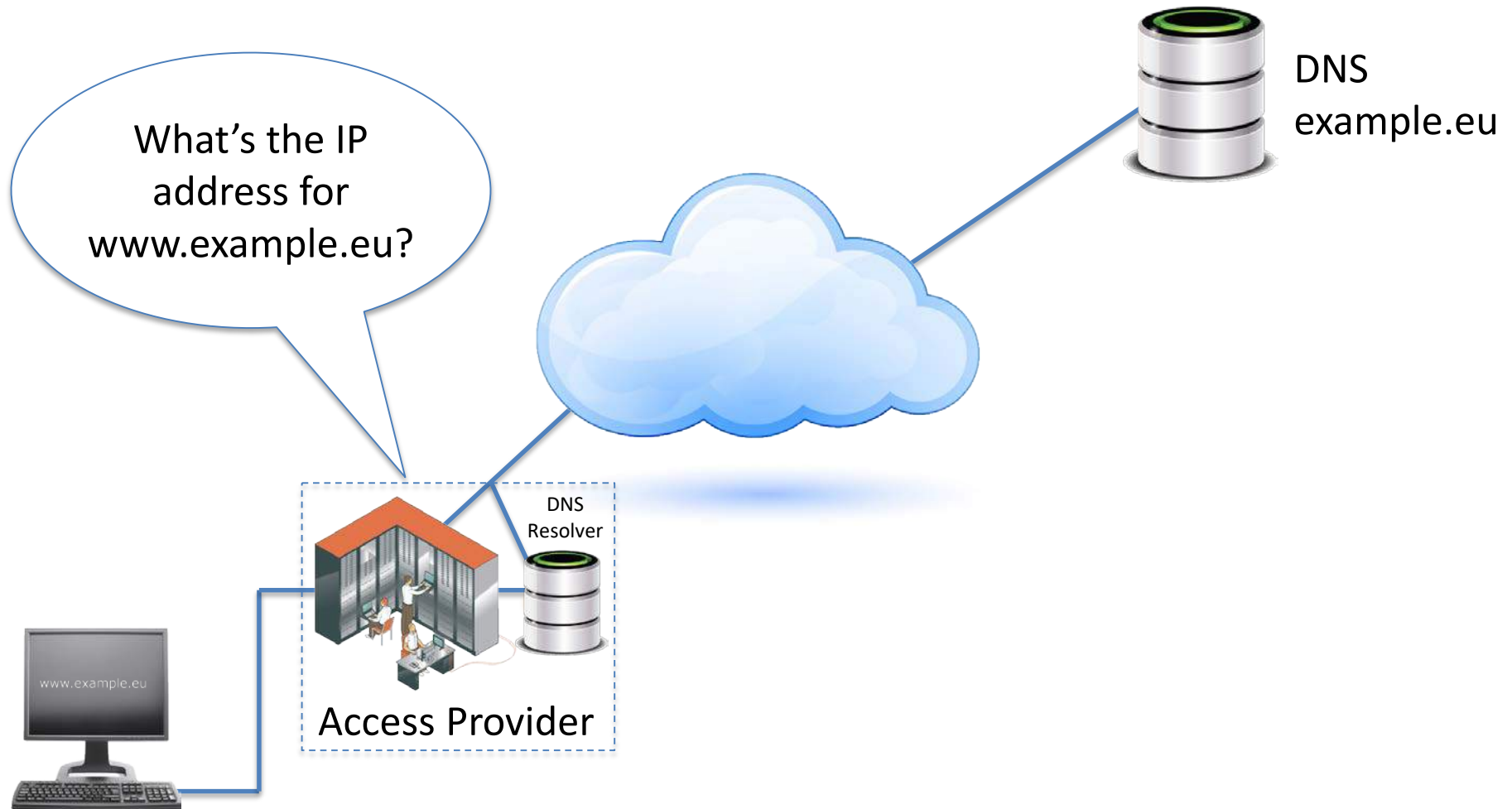
4. DNS Resolver asks .eu DNS server for IP of the DNS server for example.eu



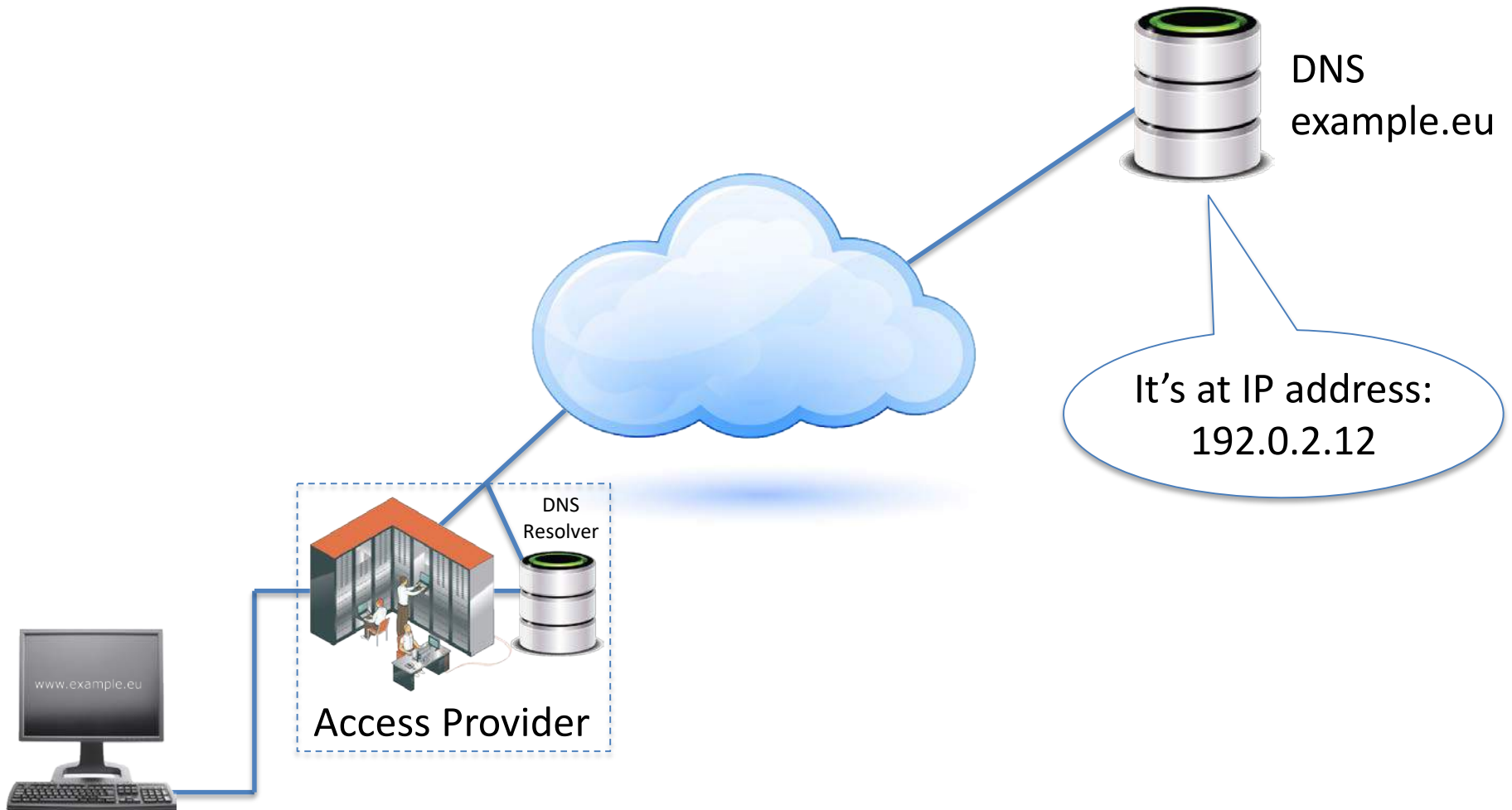
4. DNS Resolver asks .eu DNS server for IP of the DNS server for example.eu



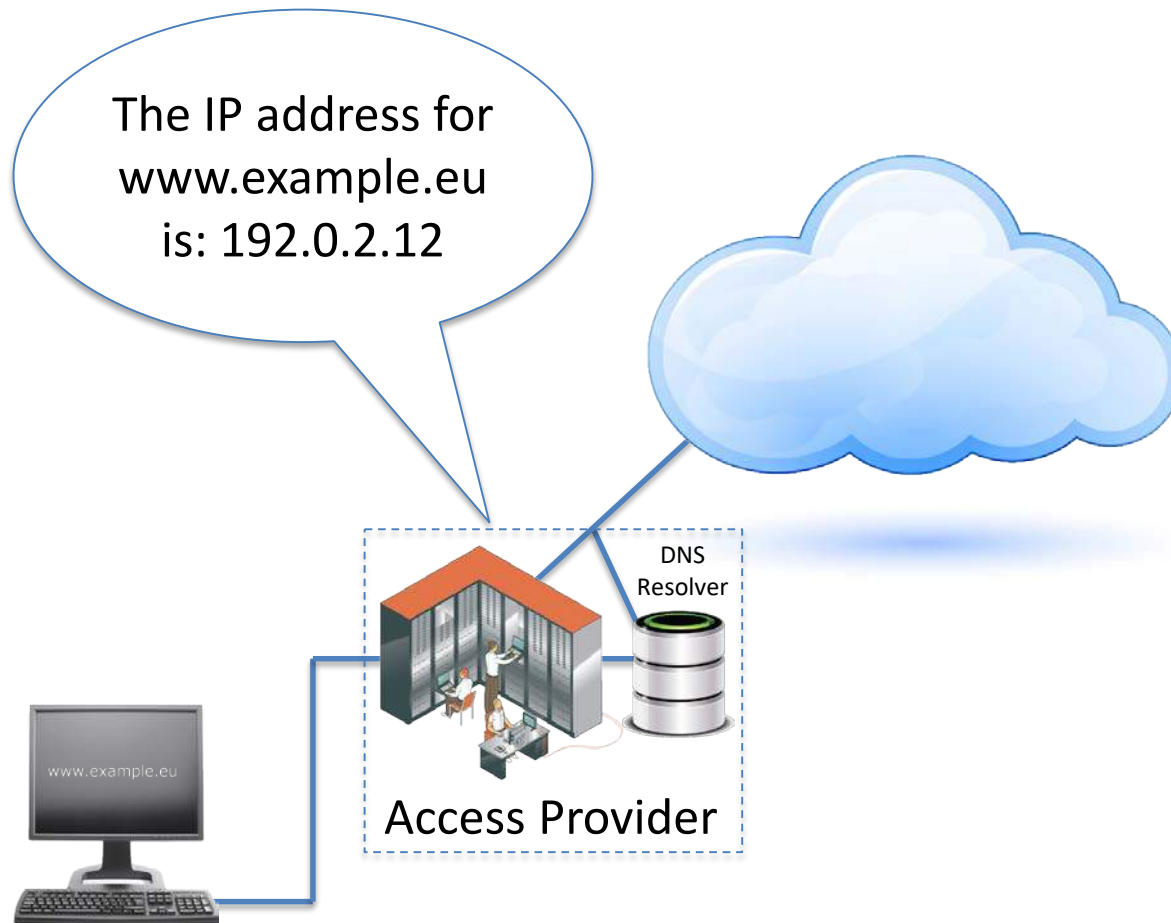
5. DNS Resolver asks for the IP address for www.example.eu ...



5. DNS Resolver asks for the IP address for www.example.eu ...



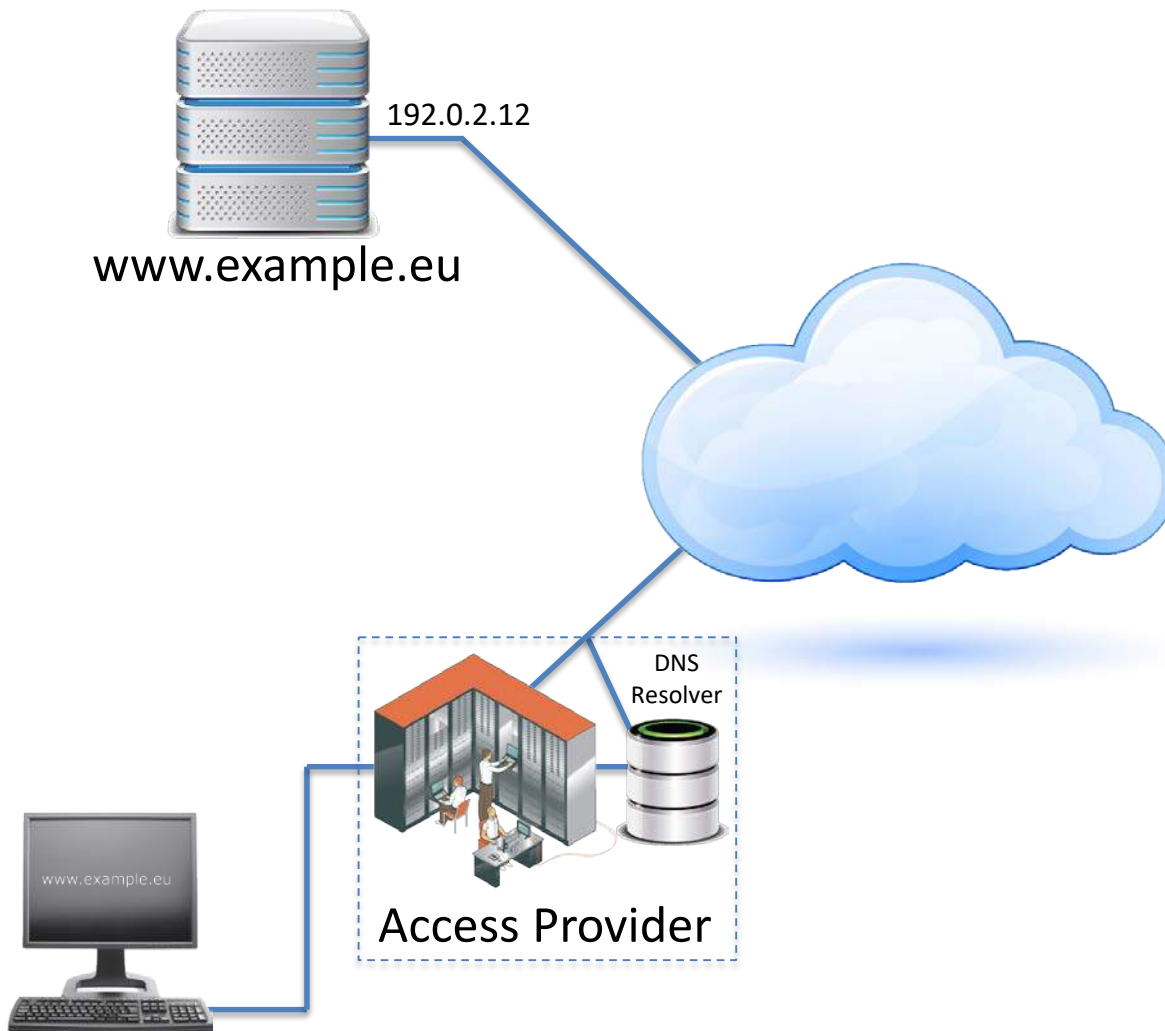
6. ... and passes the IP address back to the browser



7. ... which contacts the website host using the IP address



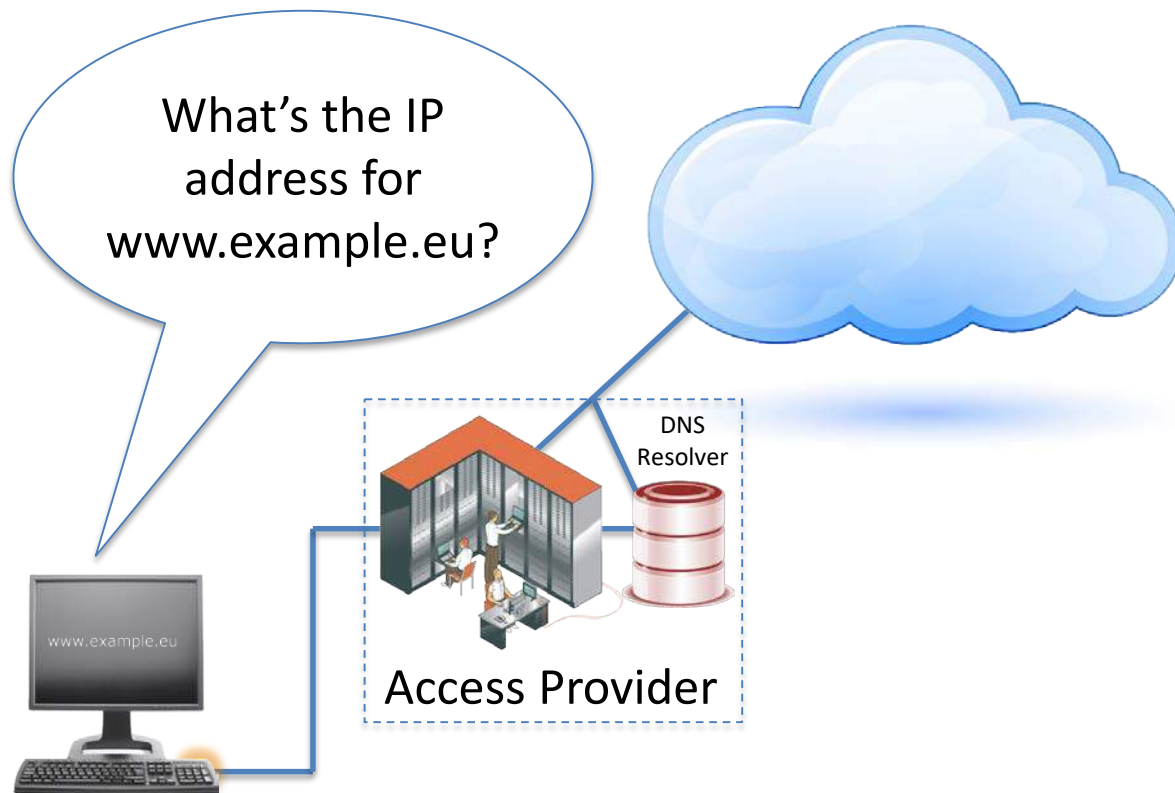
8. HTTP traffic begins



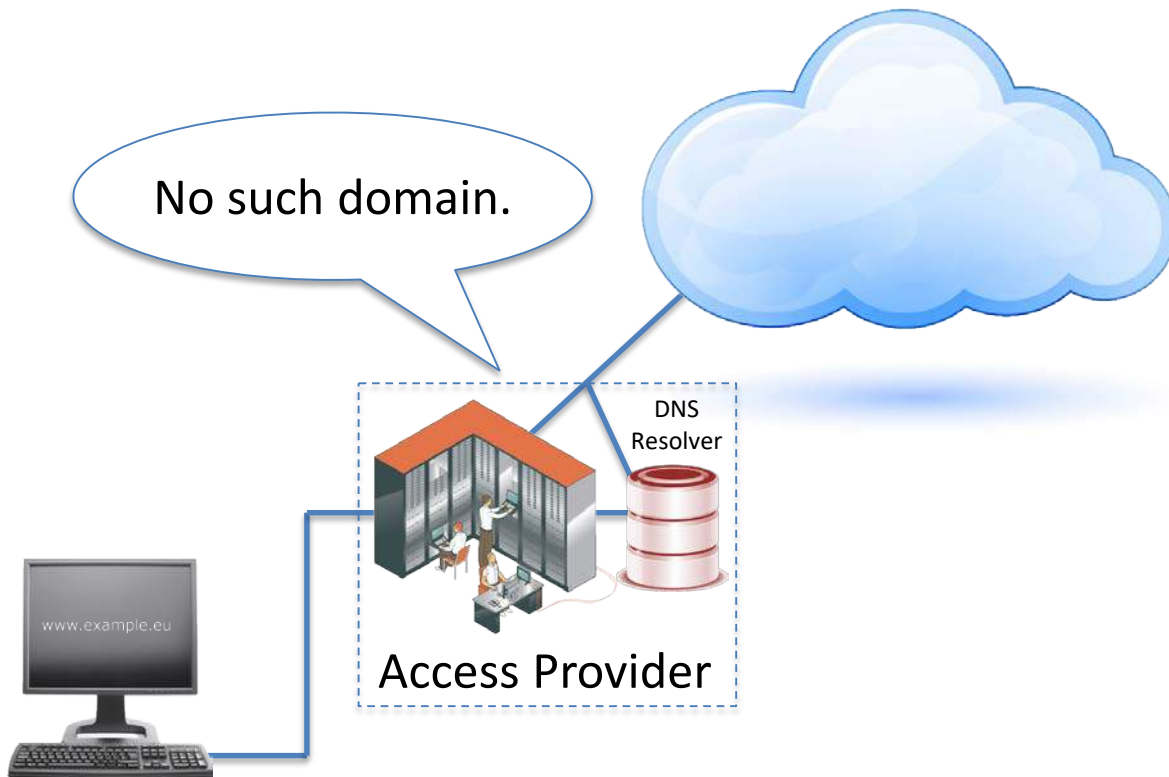
How DNS Blocking Works



How DNS blocking works



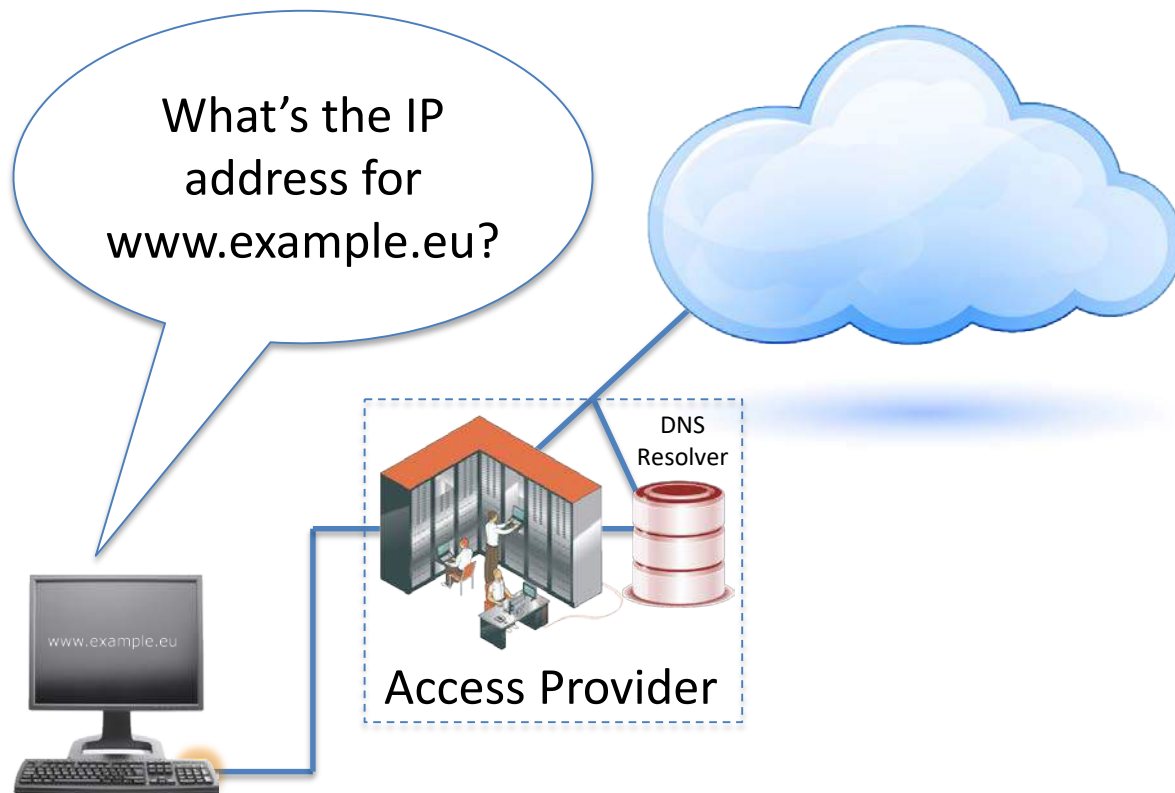
How DNS blocking works



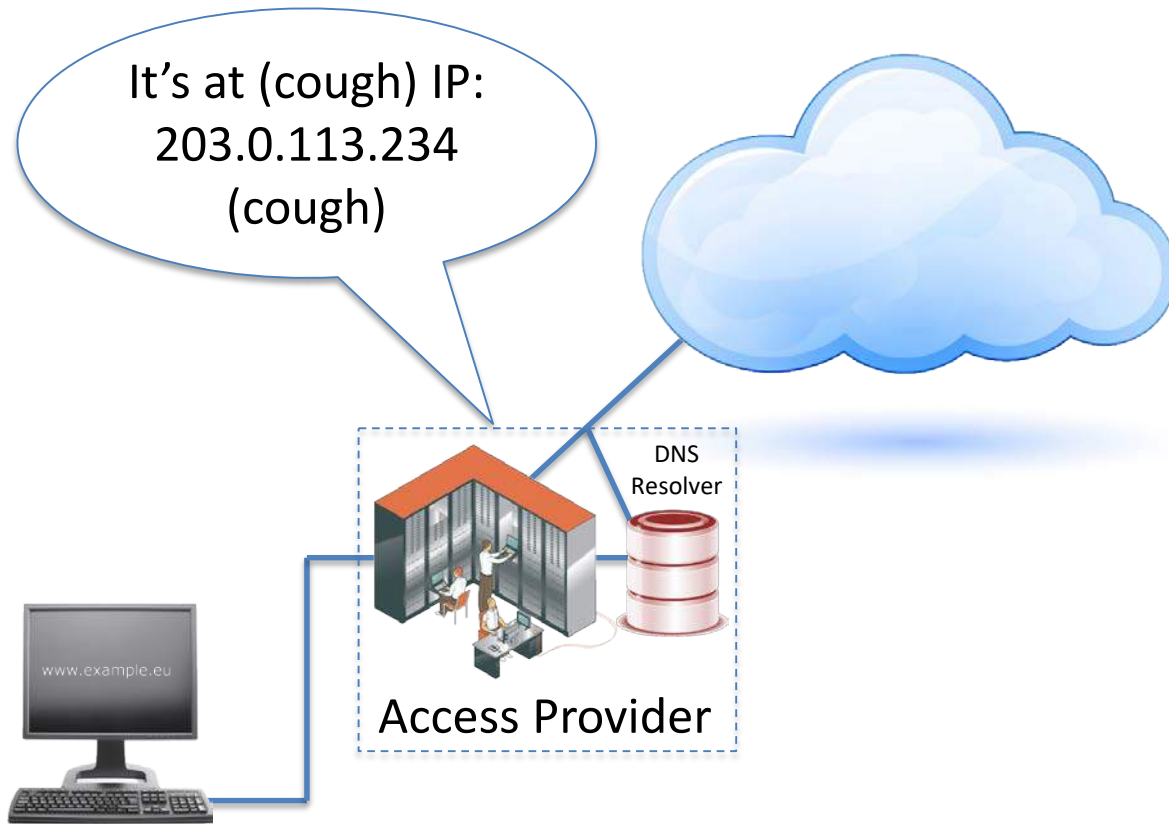
How DNS blocking works

Or...

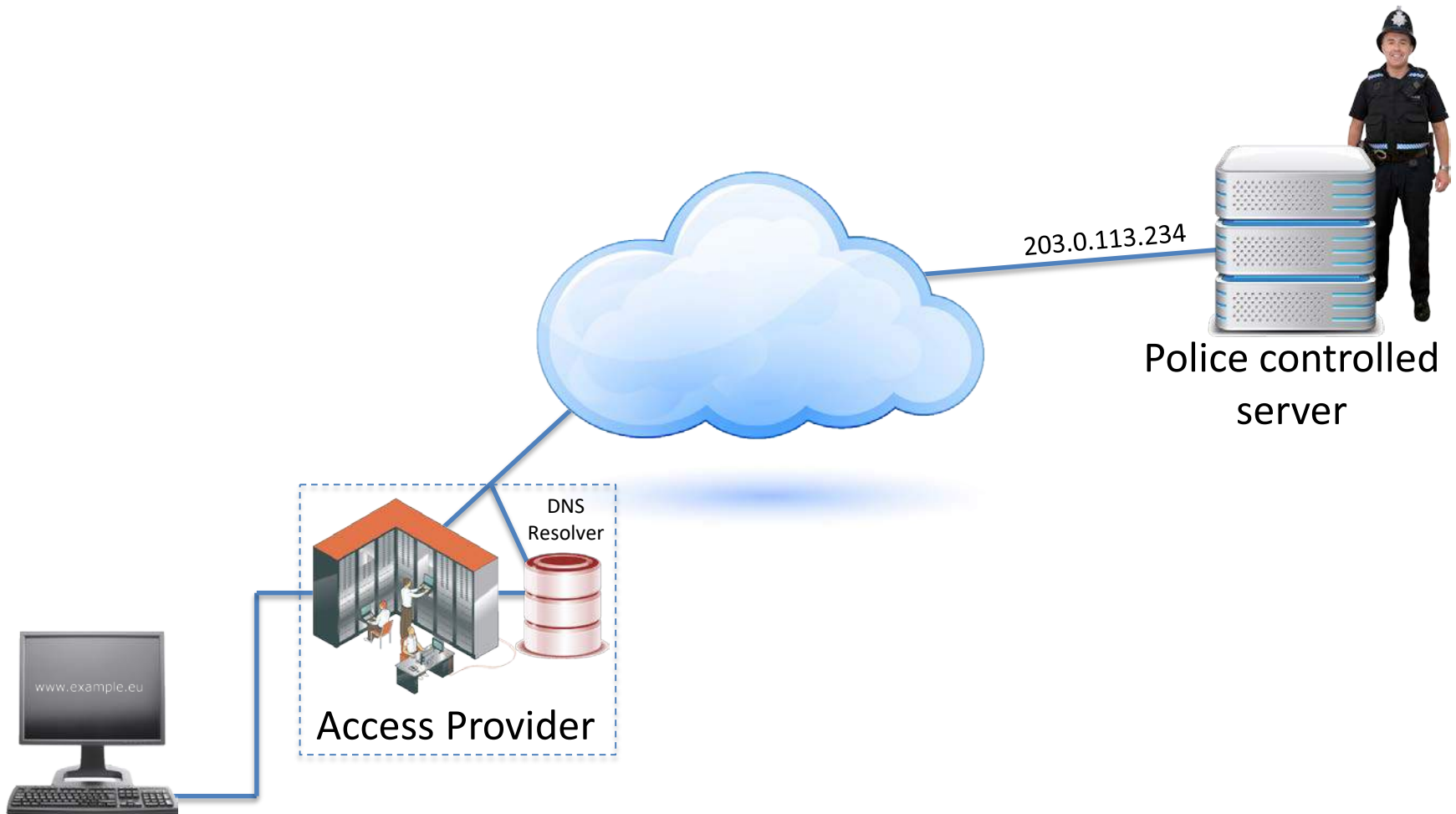
How DNS blocking works



How DNS blocking works



How DNS blocking works





U wordt naar deze stoppagina doorverwezen omdat de website die u tracht te bezoeken inhoud aanbiedt die door de Belgische wetgeving als illegaal wordt aanzien. Indien u beheerder of eigenaar van deze website bent en u meent dat deze maatregel ten onrechte is genomen, kan u een fax sturen op het nummer +32(0)2/733.56.16.

Vous venez d'être redirigé vers cette page. Le site que vous essayez de consulter contient des informations illégales au regard de la législation belge. Si vous êtes gestionnaire ou propriétaire de ce site web et si vous pensez que cette mesure a été prise à tort, vous pouvez toujours envoyer un fax au numéro +32(0)2/733.56.16.

Sie wurden auf diese Seite weitergeleitet! Die Seite, die Sie versuchen aufzurufen enthält, gemäß der belgischen Gesetzgebung, verbotene Inhalte. Sollten Sie als Verantwortlicher oder Besitzer der Webseite mit dieser Maßnahme nicht einverstanden sein, schicken Sie ein Fax an die Nummer +32(0)2/733.56.16.

You have been redirected to this stop page because the website you are trying to visit offers content that is considered illegal according to Belgian legislation.

If you are the owner or administrator of this website and you consider to be wrongly redirected, you can report this by fax at +32(0)2/733.56.16.





Lately in the news

The screenshot shows the ZDNet website interface. At the top, there's a search bar and navigation links like News, Blogs, Livres blancs, 4G Monitor, Speedtest, Progiciels, and Carrières IT. A red navigation bar contains links for FR, Windows 10, 4G, Sécurité, DevOps, PC et métiers, Transfo Numérique, Avenir de l'IT, Chiffres clés IT, and Partenaires. The main banner features the text "LET THE TRANSFORMATION BEGIN" and "PARIS" with a date "MARDI 22 NOVEMBRE - Carrousel du Louvre" and a "Je m'inscris" button. Below this is a yellow banner for "ZDNET.FR SUR LINKEDIN : Rejoignez le Club des professionnels et décideurs de l'IT". The main article is titled "Google down : Orange bloque et redirige par erreur ses internautes vers le ministère de l'Intérieur [MAJ]" and is dated "MARDI 22 NOVEMBRE Carrousel du Louvre". The article text states: "Réseaux : Depuis ce matin, les abonnés de chez Orange qui souhaitent se rendre sur le site de Google, de Wikipedia ou encore d'OVH rencontrent des difficultés. Certains utilisateurs se sont même vu servir une page du ministère de l'Intérieur, signalant le blocage administratif d'un site. Une erreur de DNS est en cause." To the right of the article is a sidebar with a "Hewlett Packard Enterprise Avenir de l'IT" section and a "publicité" section featuring a smaller version of the "PARIS" banner. At the bottom, there's a footer with the ZDNet logo, the text "Par La rédaction de ZDNet.fr | Lundi 17 Octobre 2016", a "Suivre @zdnnetfr" button, and a section titled "A la une de ZDNet" with links for "Dernières news" and "Les plus lues".

Recherchez sur ZDNet

News Blogs Livres blancs 4G Monitor Speedtest Progiciels Carrières IT Se connecter | Devenir membre

FR Windows 10 4G Sécurité DevOps PC et métiers Transfo Numérique Avenir de l'IT Chiffres clés IT Partenaires

LET THE TRANSFORMATION BEGIN PARIS MARDI 22 NOVEMBRE - Carrousel du Louvre Je m'inscris

#DellEMCForum *Que la transformation commence

ZDNET.FR SUR LINKEDIN : Rejoignez le Club des professionnels et décideurs de l'IT

ZDNet.fr > News > Google down : Orange bloque et redirige par erreur ses internautes vers le ministère de l'Intérieur [MAJ] >

Google down : Orange bloque et redirige par erreur ses internautes vers le ministère de l'Intérieur [MAJ]

MARDI 22 NOVEMBRE Carrousel du Louvre Je m'inscris

Réseaux : Depuis ce matin, les abonnés de chez Orange qui souhaitent se rendre sur le site de Google, de Wikipedia ou encore d'OVH rencontrent des difficultés. Certains utilisateurs se sont même vu servir une page du ministère de l'Intérieur, signalant le blocage administratif d'un site. Une erreur de DNS est en cause.

Par La rédaction de ZDNet.fr | Lundi 17 Octobre 2016

Suivre @zdnnetfr

Avenir de l'IT Hewlett Packard Enterprise

publicité

LET THE TRANSFORMATION BEGIN PARIS MARDI 22 NOVEMBRE Carrousel du Louvre Je m'inscris

#DellEMCForum Dell EMC Forum *Que la transformation commence

A la une de ZDNet

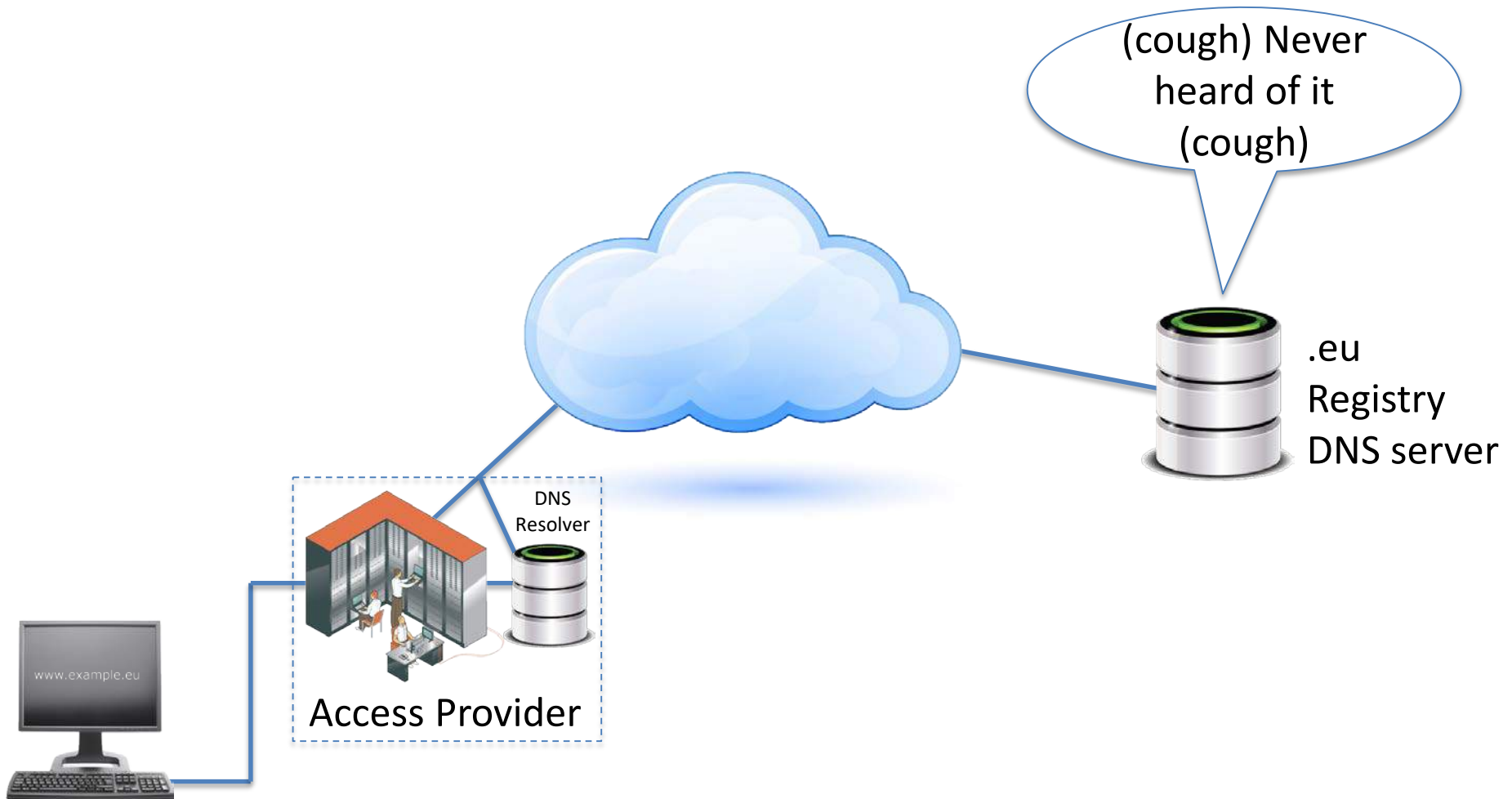
Dernières news Les plus lues

Dell EMC 61

How DNS blocking works

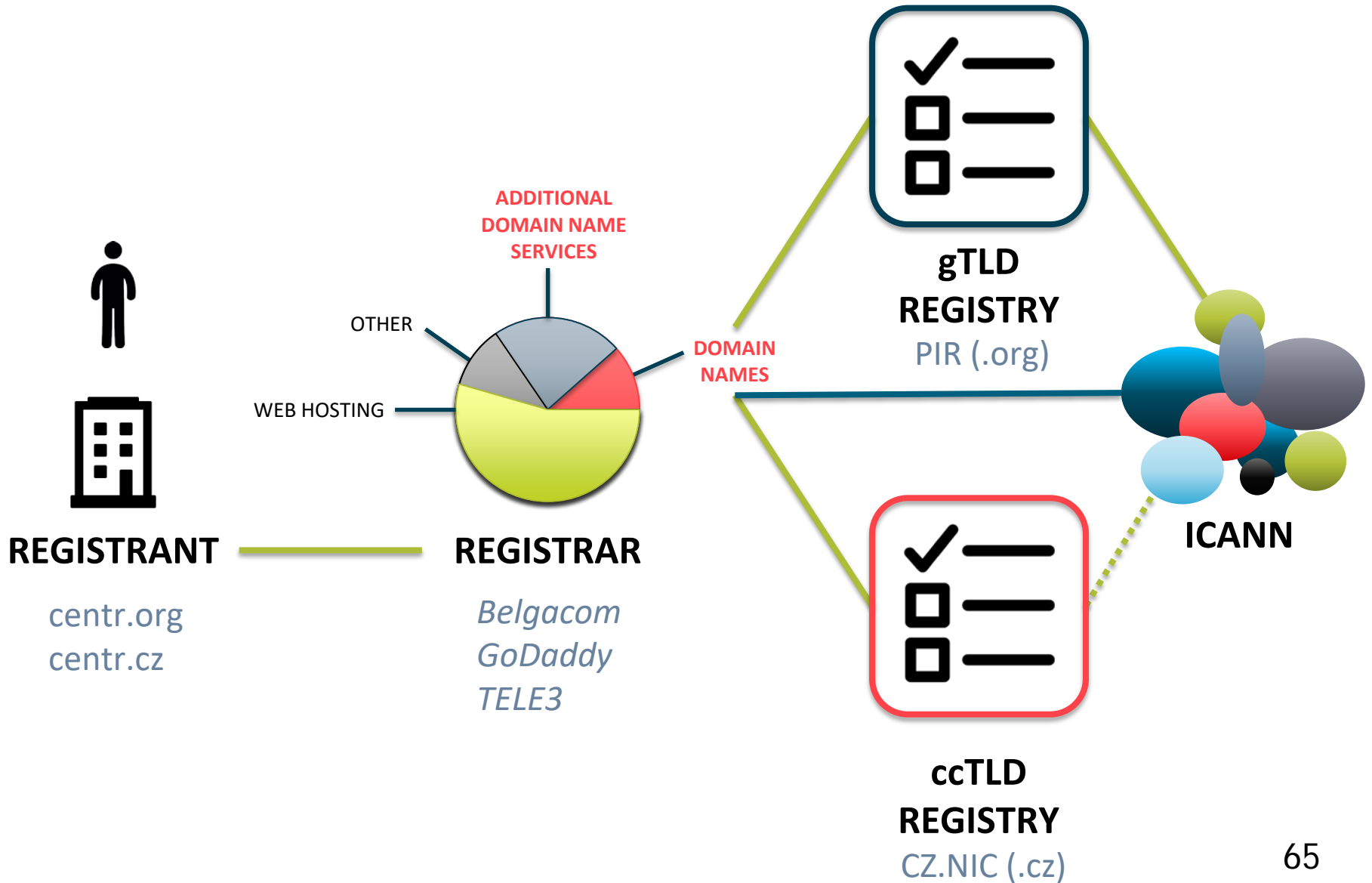
Or...

4. DNS Resolver asks .eu DNS server for IP of the DNS server for example.eu



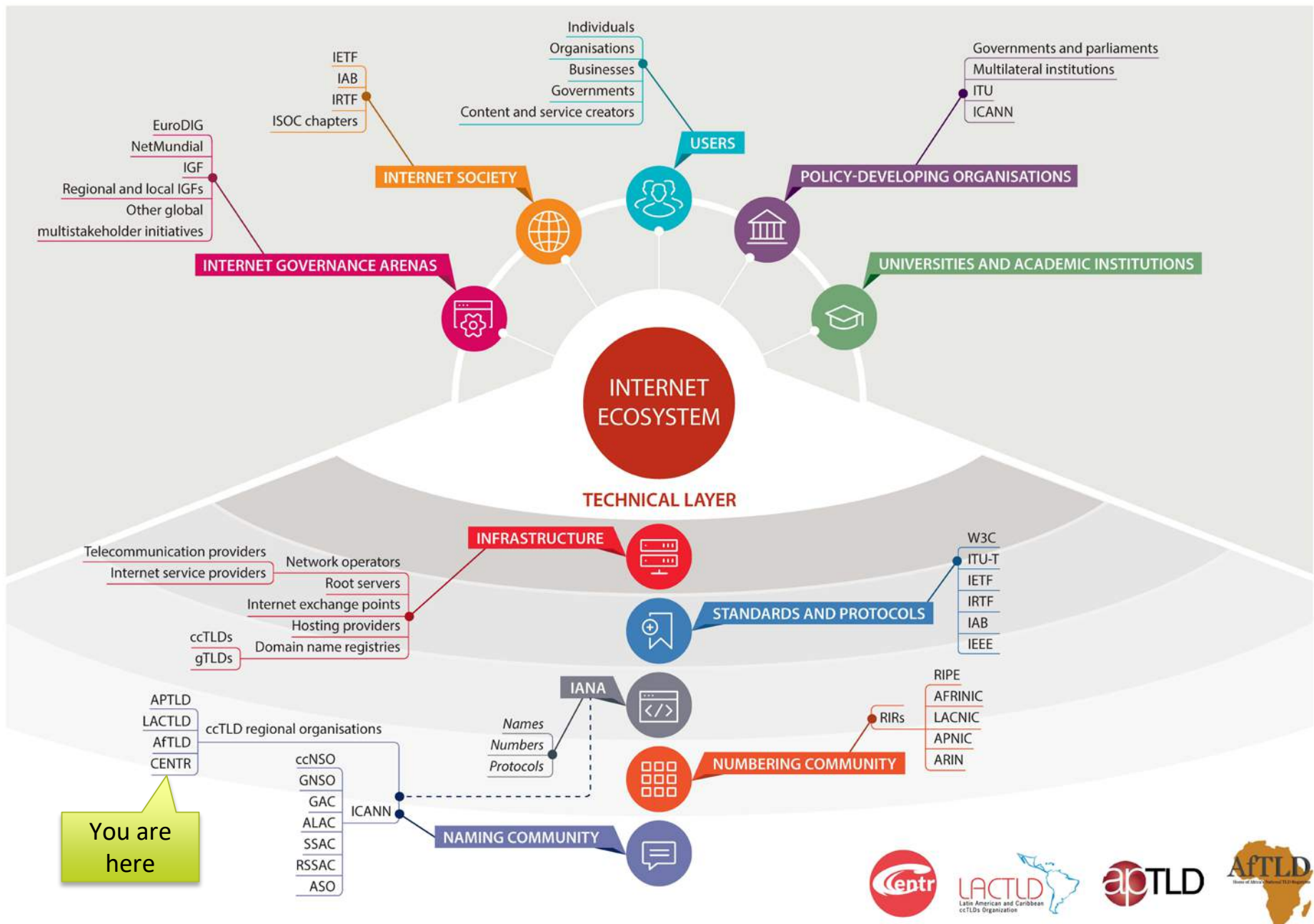
Conclusions

- “DNS blocking” is a technical term
 - It describes a technical procedure, not an outcome
 - It is not synonymous with “preventing access using DNS”
 - It is unlikely to prevent users from reaching content they are actively seeking
- There is a big difference between seeking to protect users from content they wish to avoid, and seeking to obstruct users from reaching content they seek
 - In the first case, you can enlist the support of users and the software and services they use
 - In the latter, there is always a way around any impediment, and these ways can and will be made easy for anyone to use





Time to wrap-up



What did we learn today?

The internet is built with carrots





What did we learn today?

```
Microsoft Windows [Version 6.3.9600]
(c) 2013 Microsoft Corporation. All rights reserved.

C:\Users\Peter Van Roste>tracert www.centri.org

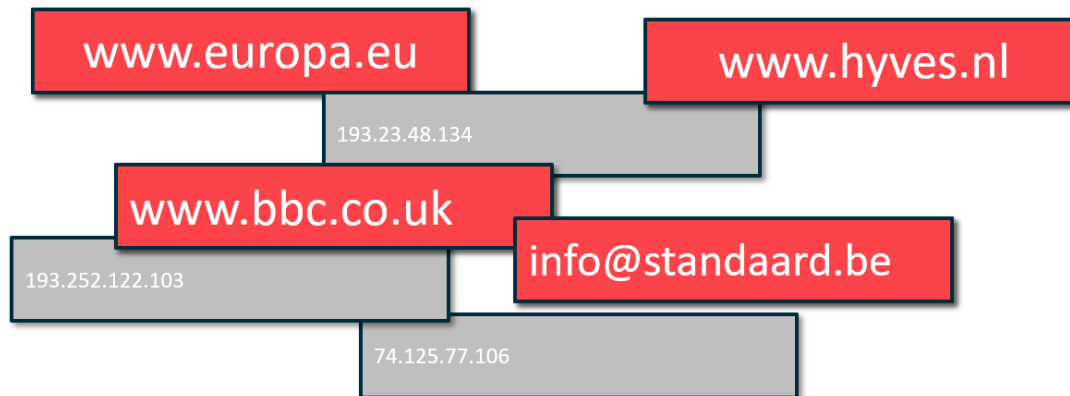
Tracing route to www.centri.org [188.93.97.197]
over a maximum of 30 hops:

  0  1 ms  1 ms  2 ms  192.168.1.1
  1  3 ms  6 ms  2 ms  192.168.254.1
  2  4 ms  4 ms  4 ms  192.168.250.1
  3 168 ms 23 ms 35 ms 172.22.194.73
  4  *      *      *      Request timed out.
  5 31 ms 27 ms 27 ms ae-28-1000.iprstr1.isp.belgacom.be [91.183.246.84]
  6 32 ms 21 ms 20 ms ae-27-1000.ibrstr4.isp.belgacom.be [91.183.246.90]
  7 21 ms 24 ms 28 ms telenet3.bnix.net [194.53.172.64]
  8 31 ms 122 ms 24 ms d05E0FA65.access.telenet.be [213.224.250.101]
  9 26 ms 25 ms 24 ms d05E0F6F5.access.telenet.be [213.224.246.245]
 10 26 ms 26 ms 25 ms d05E0FDAA.access.telenet.be [213.224.253.170]
 11 28 ms 28 ms 28 ms d05E0301A.access.telenet.be [213.224.48.26]
 12 41 ms 29 ms 28 ms ve300.cs1.dcg.as30961.net [88.151.241.250]
 13 27 ms 27 ms 27 ms ve302.swl1cl.as30961.net [88.151.241.253]
 14 27 ms 26 ms 32 ms centri-002.openminds.be [188.93.97.197]

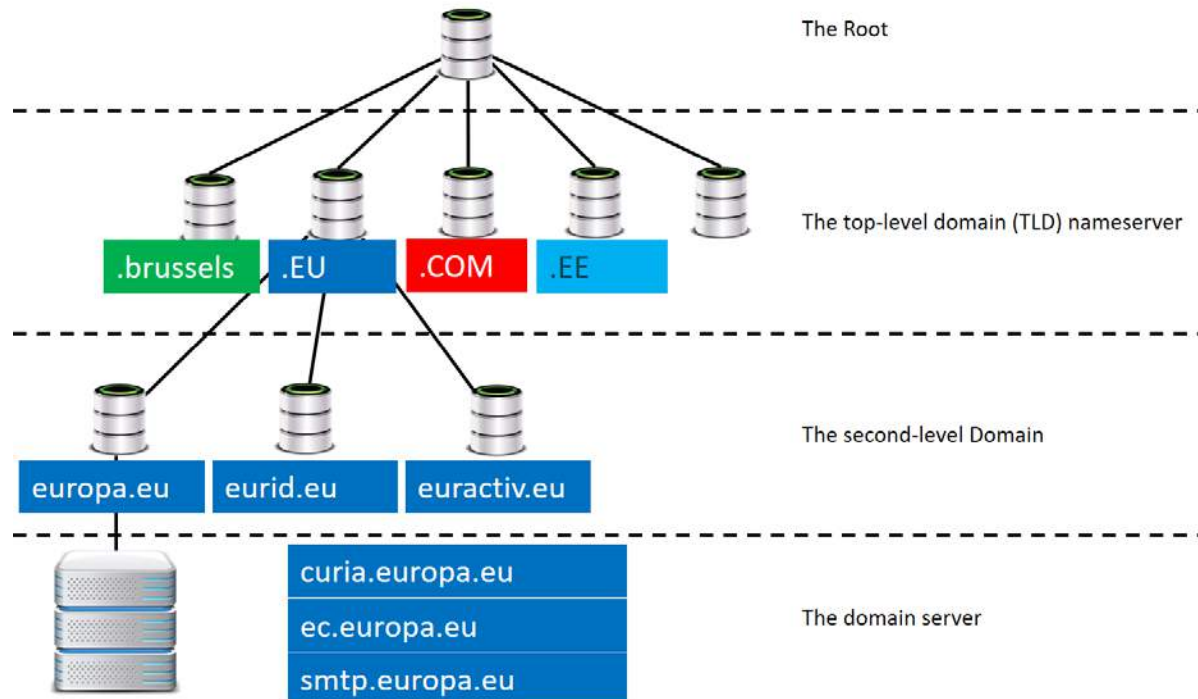
Trace complete.
```



What did we learn today?



What did we learn today?



What did we learn today?

Technical flaws in DNS blocking





One more thing...

Some corners were cut in the making of this presentation.



Thanks to Malcolm Hutton (Linx)
for the fancy slides on blocking!



Thank you

alex@centr.org