



Le DNS

Colonne vertébrale cachée d'Internet

Pierre-Olivier Mercier

Bonjour !

Pierre-Olivier Mercier

Bonjour !



happyDomain.org

Pierre-Olivier Mercier

```
$ netcat [2a01:e35:8bb7:3c60:d263:d4ff:fe00:8332] 80
```

```
$ netcat [2a01:e35:8bb7:3c60:d263:d4ff:fe00:8332] 80
```

==



https://[2a01:e35:8bb7:3c60:d263:d4ff:fe00:8332]

```
$ netcat [2a01:e35:8bb7:3c60:d263:d4ff:fe00:8332] 80
```

vs.

```
$ netcat you.p0m.fr 80
```

\$ netcat [2a...:8332] 80

\$ netcat you.p...

GET /images/chats HTTP/1.0

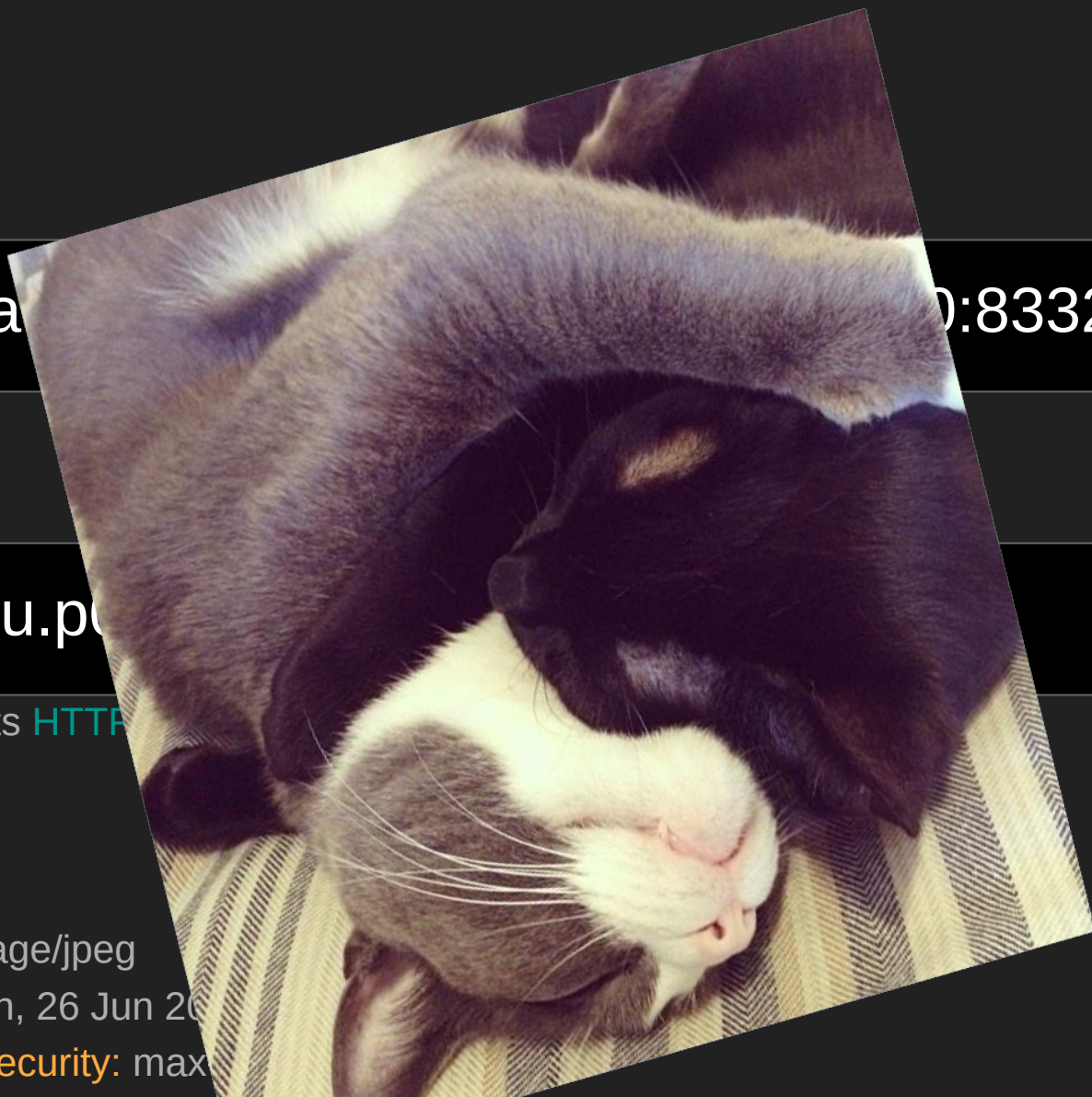
HTTP/1.0 200 OK

Server: nginx

Content-Type: image/jpeg

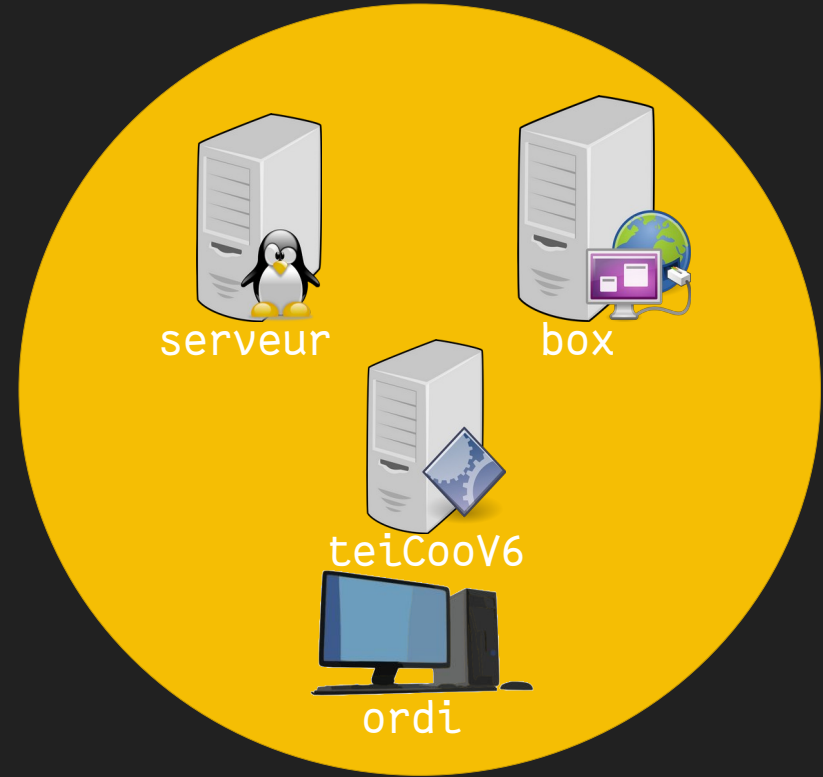
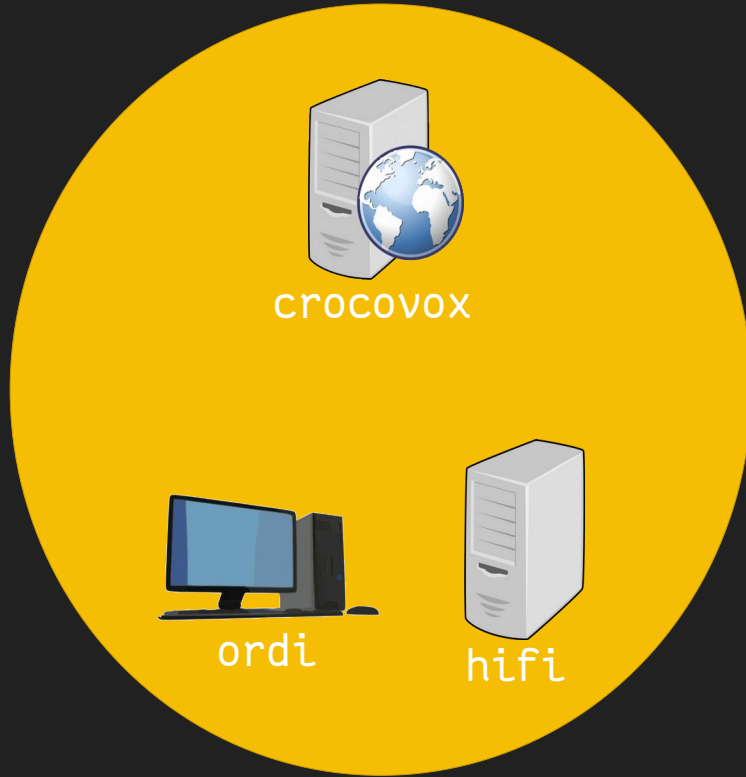
Last-Modified: Sun, 26 Jun 20...

Strict-Transport-Security: max...

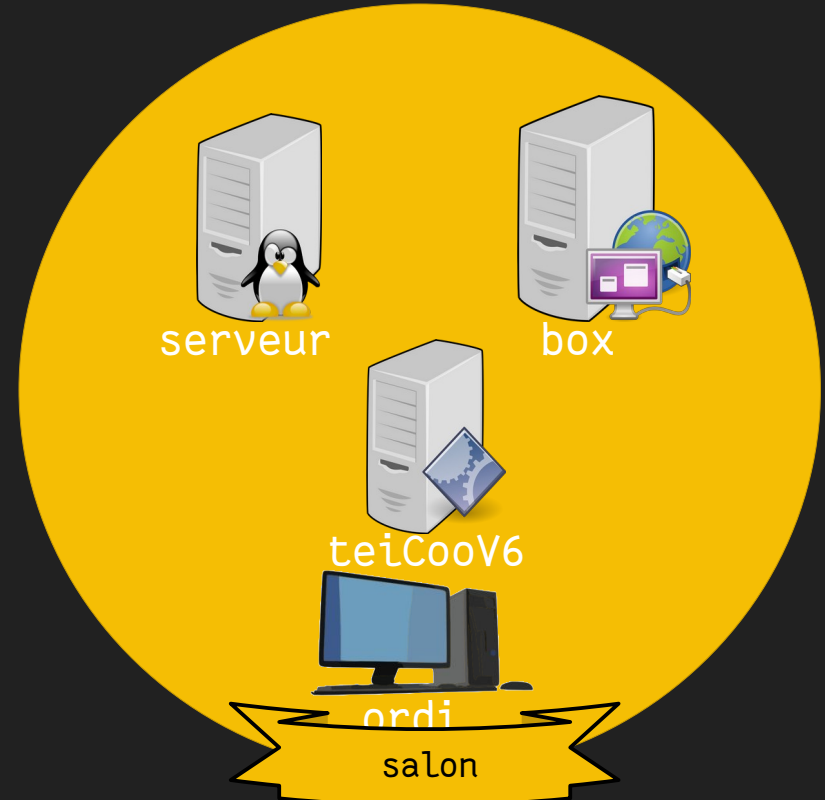
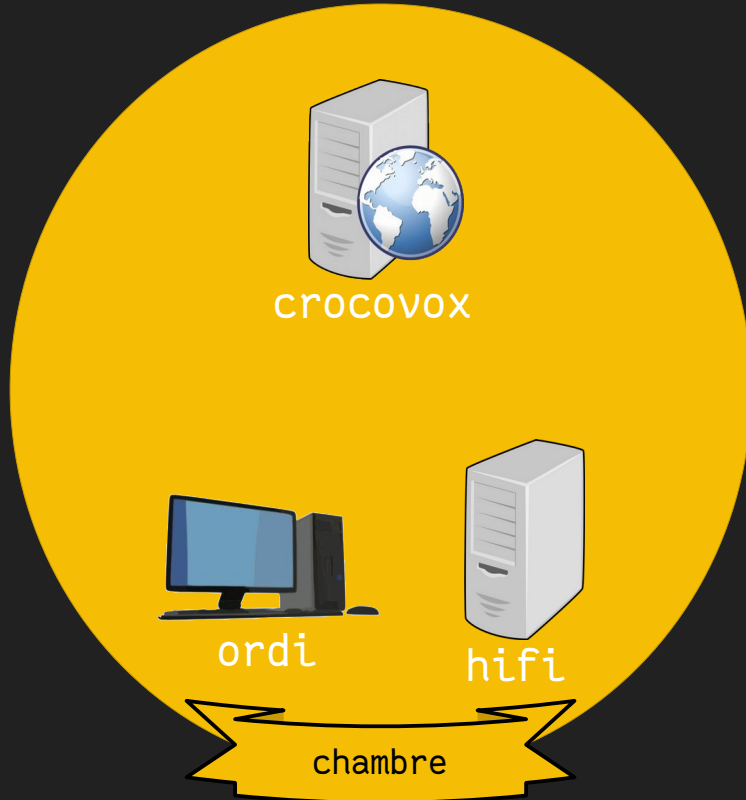




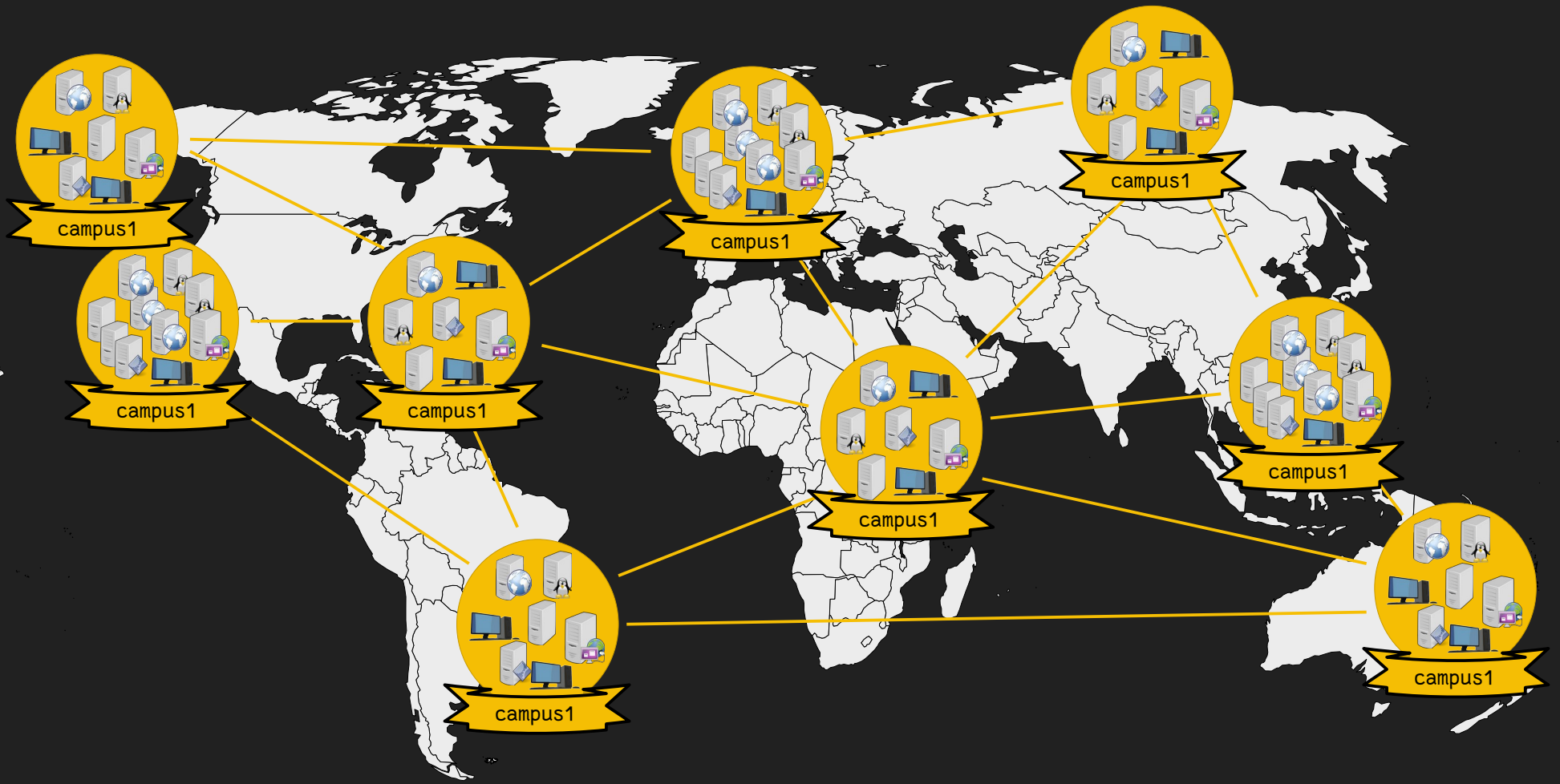
Un domaine ?



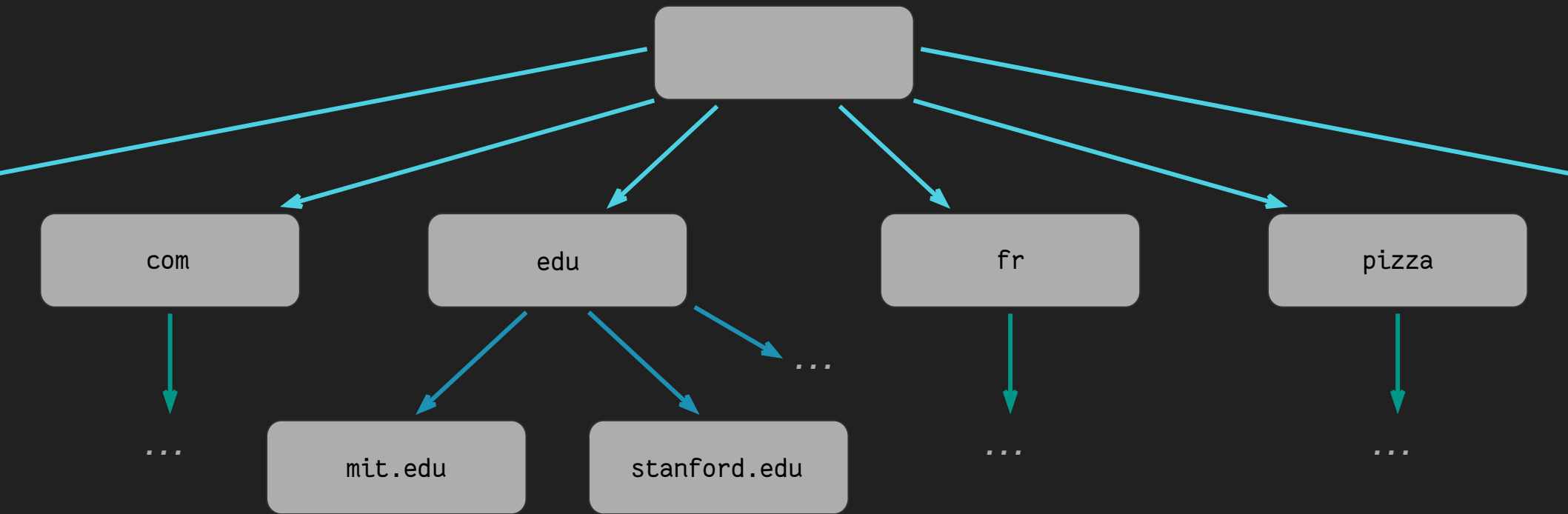
Un domaine !



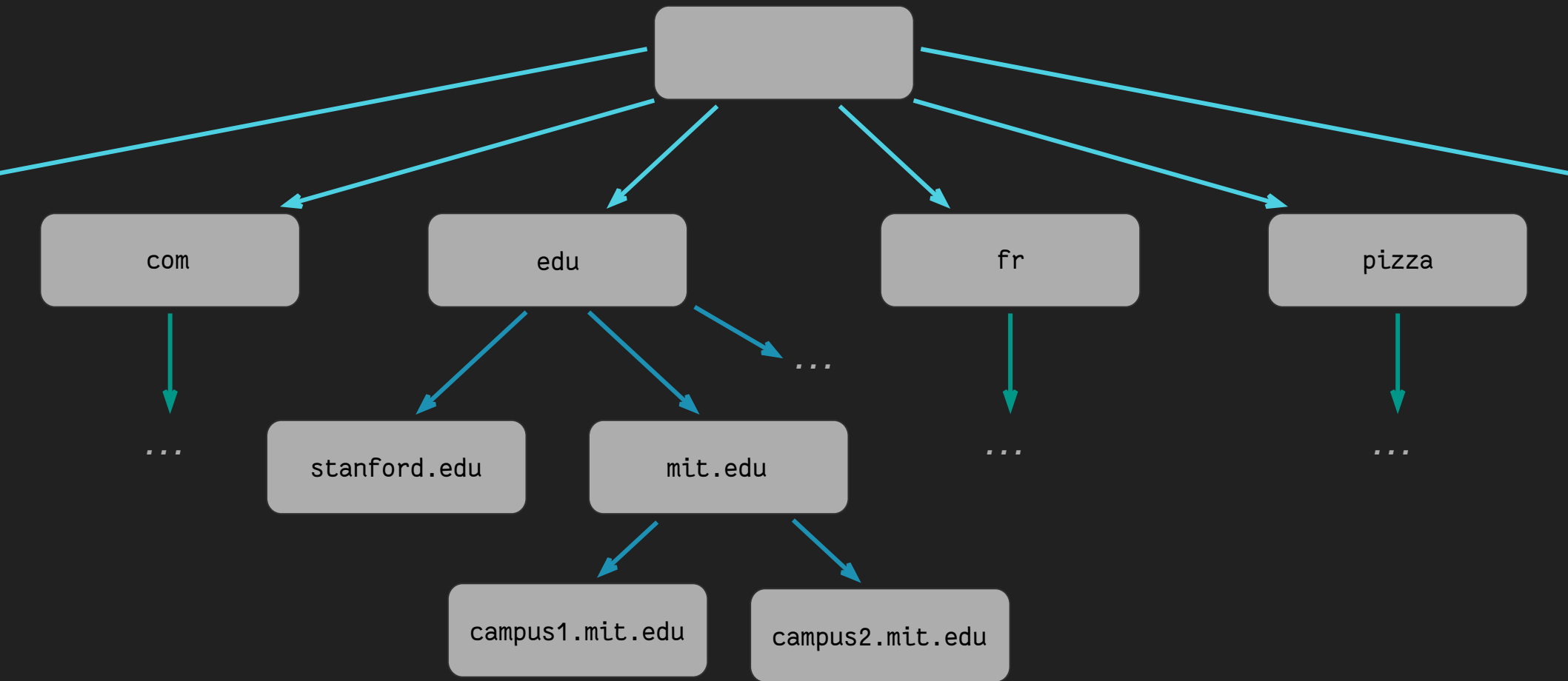
— **Un nom de domaine ?** —



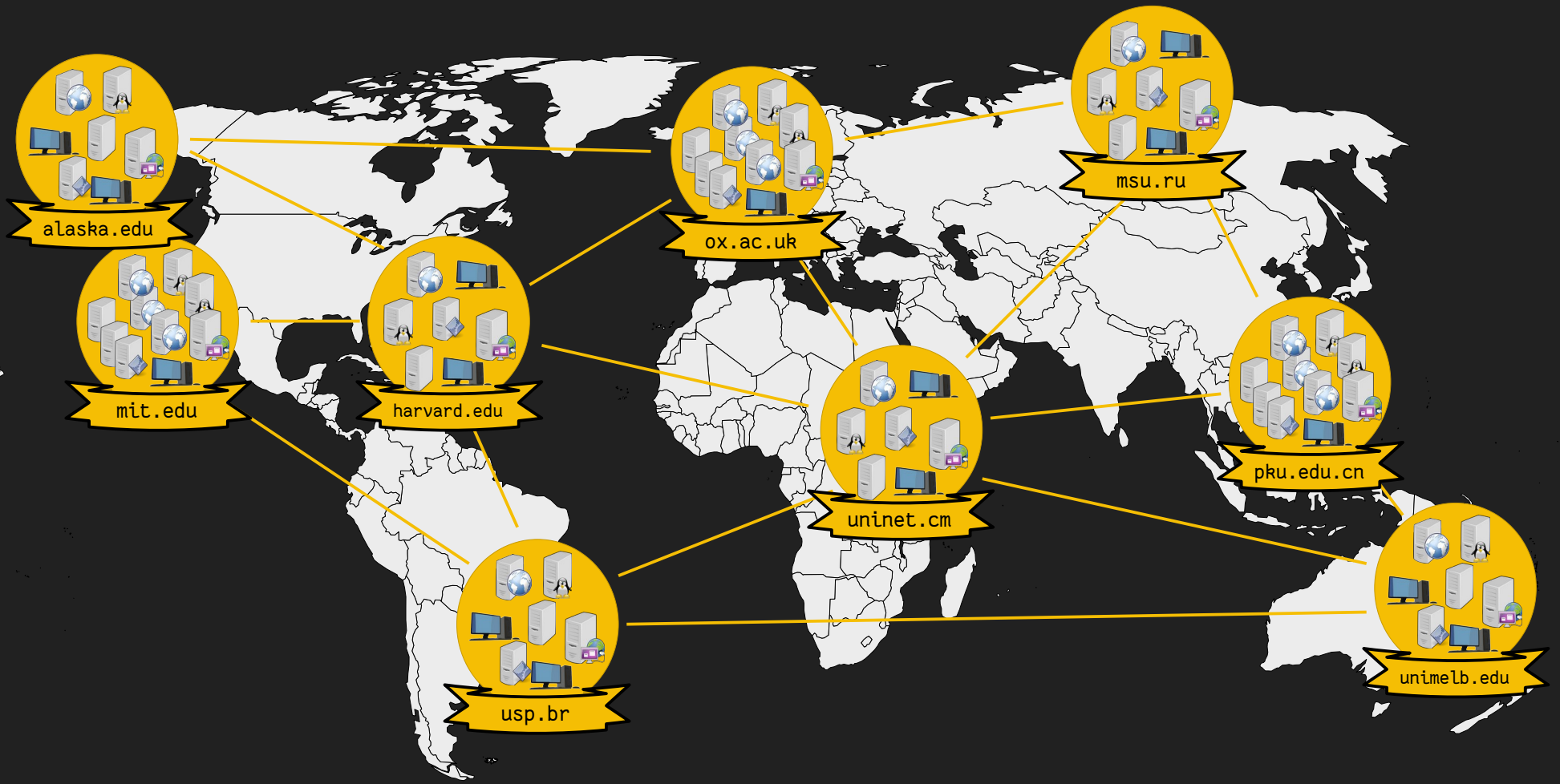
Sur Internet



RFC920



RFC920



Sur Internet

```
# /etc/hosts: Local Host Database
#
# This file describes a number of aliases-to-address mappings for the for
# local hosts that share this file.
#
# In the presence of the domain name service or NIS, this file may not be
# consulted at all; see /etc/host.conf for the resolution order.
#
# IPv4 and IPv6 localhost aliases
127.0.0.1    localhost
::1         localhost
```

/etc/hosts

```
# /etc/hosts: Local Host Database
#
# This file describes a number of aliases-to-address mappings for the for
# local hosts that share this file.
#
# In the presence of the domain name service or NIS, this file may not be
# consulted at all; see /etc/host.conf for the resolution order.
#
# IPv4 and IPv6 localhost aliases
127.0.0.1 : localhost
::1      : localhost
:
:
```

/etc/hosts

```
# /etc/hosts: Local Host Database
#
# This file describes a number of aliases-to-address mappings for the for
# local hosts that share this file.
#
# In the presence of the domain name service or NIS, this file may not be
# consulted at all; see /etc/host.conf for the resolution order.
#
# IPv4 and IPv6 localhost aliases
127.0.0.1    localhost
::1         localhost

10.42.201.1  machine1.labo1.campus1.mit.edu
10.42.201.2  machine2.labo1.campus1.mit.edu
10.42.201.3  machine3.labo1.campus1.mit.edu
```

/etc/hosts

```
# /etc/hosts: Local Host Database
#
# This file describes a number of aliases-to-address mappings for the for
# local hosts that share this file.
#
# In the presence of the domain name service or NIS, this file may not be
# consulted at all; see /etc/host.conf for the resolution order.
#
# IPv4 and IPv6 localhost aliases
127.0.0.1    localhost
::1         localhost

10.42.201.1 machine1.labo1.campus1.mit.edu exmachine.labo2.campus1.mit.edu
10.42.201.2 machine2.labo1.campus1.mit.edu research.mit.edu
10.42.201.3 machine3.labo1.campus1.mit.edu mail.campus1.mit.edu
```

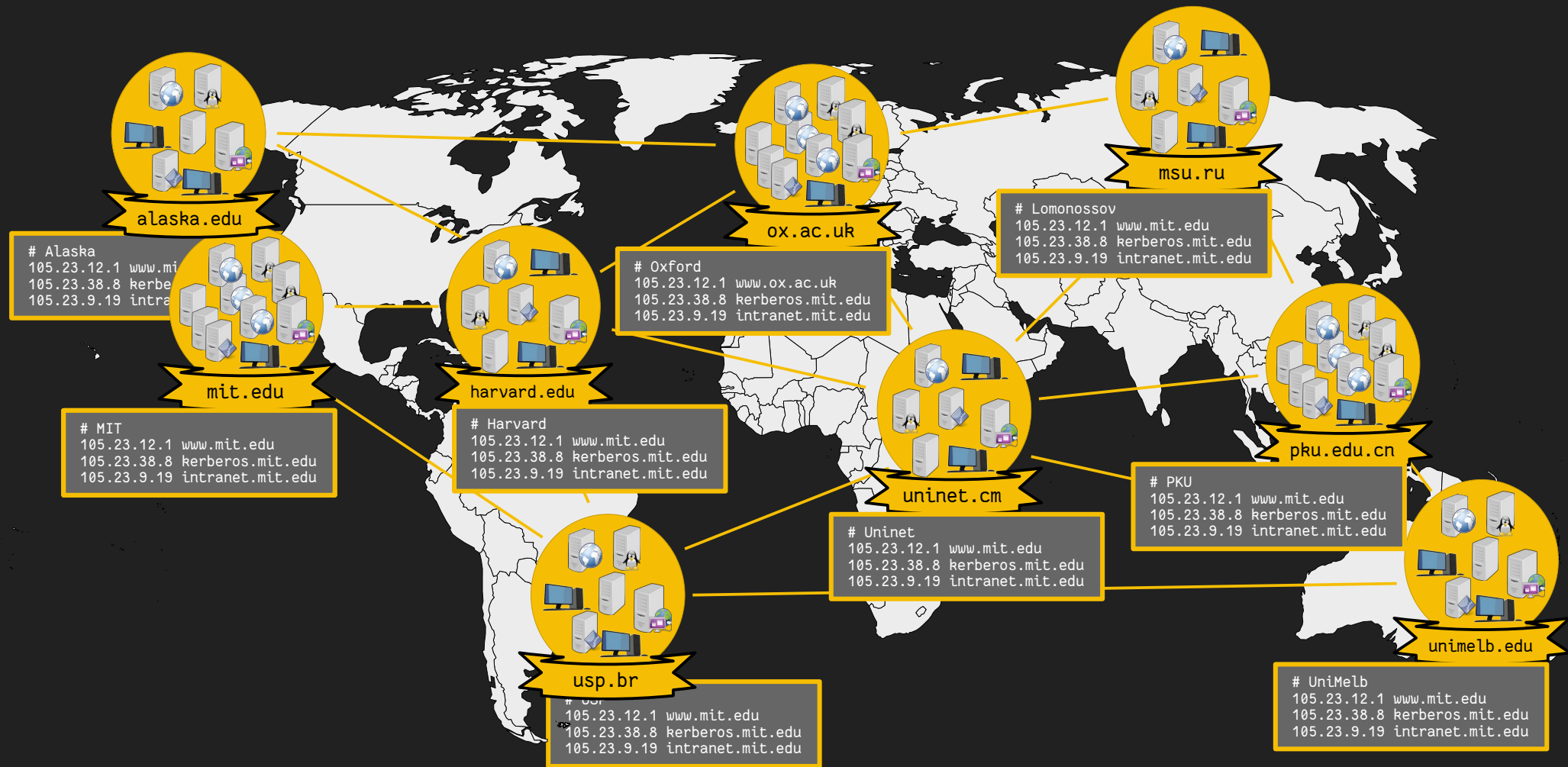
/etc/hosts

```
# /etc/hosts: Local Host Database
#
# This file describes a number of aliases-to-address mappings for the for
# local hosts that share this file.
#
# In the presence of the domain name service or NIS, this file may not be
# consulted at all; see /etc/host.conf for the resolution order.
#
# IPv4 and IPv6 localhost aliases
127.0.0.1    localhost
::1         localhost

# MIT
105.23.12.1  www.mit.edu
105.23.38.8  kerberos.mit.edu
105.23.9.19  intranet.mit.edu

# Stanford
69.18.25.54  mx.stanford.edu
69.18.25.55  ns.stanford.edu
```

/etc/hosts



Le DNS

```
example.com.      IN  SOA  ns1.example.com. admin.example.com. (
                    2023100101 ; serial number
                    3600       ; refresh
                    1800       ; retry
                    604800     ; expire
                    86400     ; minimum TTL
)
example.com.      IN  NS   ns1.example.com.
example.com.      IN  NS   ns2.example.com.
example.com.      IN  TXT  "v=spf1 include:_spf.example.com ~all"
example.com.      IN  MX   10 mail.example.com.
example.com.      IN  A    192.0.2.1
example.com.      IN  AAAA  2001:0db8:85a3:0000:0000:8a2e:0370:7334
www.example.com.  IN  CNAME example.com.
```

Enregistrement DNS

```
example.com.      IN   SOA  ns1.example.com. admin.example.com. (  
                  2023100101 ; serial number  
                  3600      ; refresh  
                  1800      ; retry  
                  604800    ; expire  
                  86400     ; minimum TTL  
                  )  
example.com.      IN   NS   ns1.example.com.  
example.com.      IN   NS   ns2.example.com.  
example.com.      IN   TXT "v=spf1 include:_spf.example.com ~all"  
example.com.      IN   MX   10 mail.example.com.  
example.com.      IN   A    192.0.2.1  
example.com.      IN   AAAA 2001:0db8:85a3:0000:0000:8a2e:0370:7334  
www.example.com.  IN   CNAME example.com.
```

Enregistrement **DNS**

À vous !

```
42sh$ sudo apt install dnsutils  
42sh$ sudo yum install bind-utils  
42sh$ sudo pacman -S bind
```

```
42sh$ dig starlinux.org
```

```
; <<>> DiG 9.18.31 <<>> starinux.org
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 41183
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags;; udp: 1232
;; QUESTION SECTION:
;starinux.org. IN A

;; ANSWER SECTION:
starinux.org. 3600 IN A 213.36.253.166

;; Query time: 23 msec
;; SERVER: 192.168.0.254#53(192.168.0.254) (UDP)
;; WHEN: Mon Jan 01 12:34:56 CEST 2042
;; MSG SIZE rcvd: 57
```

dig

À vous !

Trouvez les adresses des domaines suivants :

- **linuxfr.org**
- **google.com**
- **google.fr**
- **debian.org**

```
# Generated by resolvconf  
domain home  
nameserver 192.168.0.254  
nameserver 2a01:123:456:789::1
```

/etc/resolv.conf

À vous !

```
42sh$ dig @9.9.9.9 starlinux.org
```

Quelles adresses trouvez-vous pour **google.fr** avec :

- Votre résolveur par défaut
- 1.1.1.1
- 8.8.8.8
- 9.9.9.9

À vous !

Quelles adresses trouvez-vous pour **libgen.is** avec :

- Votre résolveur par défaut
- 1.1.1.1

```
42sh$ dig @9.9.9.9 libgen.is
```

```
42sh$ dig libgen.is
```

```
; <<>> DiG 9.18.31 <<>> libgen.is  
; (1 server found)  
;; global options: +cmd  
;; Got answer:  
;; —>HEADER<— status: NOERROR  
;; flags: qr rd ra; QUERY: 1, ANSWER: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 4096  
;; QUESTION SECTION:  
;libgen.is. IN A  
  
;; ANSWER SECTION:  
libgen.is. 3585 IN A 127.0.0.1
```

```
42sh$ dig @1.1.1.1 libgen.is
```

```
; <<>> DiG 9.18.31 <<>> libgen.is  
; (1 server found)  
;; global options: +cmd  
;; Got answer:  
;; —>HEADER<— status: NOERROR  
;; flags: qr rd ra; QUERY: 1, ANSWER: 1  
  
;; OPT PSEUDOSECTION:  
; EDNS: version: 0, flags:; udp: 4096  
;; QUESTION SECTION:  
;libgen.is. IN A  
  
;; ANSWER SECTION:  
libgen.is. 3585 IN A 193.218.118.42
```

DNS menteurs

Erreurs courantes

```
42sh$ dig c-est-un-domain-qui-n-existe-pas.com
```

Domaine **inexistant**

```
42sh$ dig c-est-un-domain-qui-n-existe-pas.com
```

```
; <<>> DiG 9.18.31 <<>> c-est-un-domain-qui-n-existe-pas.com
;; global options: +cmd
;; Got answer:
;; —>>HEADER<<— opcode: QUERY, status: NXDOMAIN, id: 13474
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; QUESTION SECTION:
;c-est-un-domain-qui-n-existe-pas.com. IN A

;; AUTHORITY SECTION:
com. 900 IN SOA a.gtld-servers.net. nstld.verisign-grs.com.
          1748939057 1800 900 604800 900
```

Domaine **inexistant**

```
42sh$ dig existe-pas.example.com
```

```
42sh$ dig existe-pas.www.example.com
```

Domaine *inexistant*

```
42sh$ dig existe-pas.example.com
```

```
42sh$ dig existe-pas.www.example.com
```

Trouvez un sous-domaine qui n'existe pas sous :

```
42sh$ dig jexiste.com
```

Domaine **inexistant**

```
42sh$ dig _spf.gandi.net
```

```
; <<>> DiG 9.18.31 <<>> _spf.gandi.net
;; global options: +cmd
;; Got answer:
;; —>HEADER<— opcode: QUERY, status: NOERROR, id: 13474
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 1, ADDITIONAL: 1

;; QUESTION SECTION:
;gandi.net. IN A

;; AUTHORITY SECTION:
gandi.net. 1200 IN SOA dns0.gandi.net. hostmaster.gandi.net.
                2025060400 900 900 1209600 1200
```

Enregistrement **inexistant**

```
42sh$ dig @ns0.nemunai.re example.com
```

Refus de **traitement**

```
42sh$ dig @ns0.nemunai.re example.com
```

```
; <<>> DiG 9.18.31 <<>> example.com  
;; global options: +cmd  
;; Got answer:  
;; —>HEADER<— opcode: QUERY, status: REFUSED, id: 13474  
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1  
  
;; QUESTION SECTION:  
;example.com IN A
```

Refus de **traitement**

```
42sh$ dig @208.67.222.222 example.com
```

```
; <<>> DiG 9.18.31 <<>> example.com
;; global options: +cmd
;; Got answer:
;; —>HEADER<— opcode: QUERY, status: REFUSED, id: 13474
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 2

;; QUESTION SECTION:
;example.com IN A

;; ADDITIONAL SECTION:
example.com.      0   IN TXT "The OpenDNS service is currently
unavailable in France and some French territories due to a court order
under Article L.333-10 of the French Sport Code. See
https://support.opendns.com/hc/en-us"
```

Refus de traitement

```
42sh$ dig dnssec-failed.org
```

```
42sh$ dig @1.1.1.1 dnssec-failed.org
```

Erreur **interne**

```
42sh$ dig @1.1.1.1 dnssec-failed.org
```

```
; <<>> DiG 9.18.31 <<>> dnssec-failed.org
;; global options: +cmd
;; Got answer:
;; —>>HEADER<<— opcode: QUERY, status: SERVFAIL, id: 13474
;; flags: qr rd ra; QUERY: 1, ANSWER: 0, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1232
; EDE: 9 (DNSKEY Missing): (no SEP matching the DS found for
                                dnssec-failed.org.)

;; QUESTION SECTION:
;dnssec-failed.org  IN  A
```

Erreur interne

Erreurs courantes

Code d'err	Signification
NOERROR	Pas d'erreur
NXDOMAIN	Domain inexistant
REFUSED	Refus de traitement
SERVFAIL	Erreur interne du résolveur
FORMERR	Erreur de format
NOTIMP	Fonction non implémentée
NOTAUTH	Requête non autorisée

Le cache

```
42sh$ dig starlinux.org
```

Le cache

```
42sh$ dig starinix.org
```

```
;; ANSWER SECTION:  
starinix.org. 2345 IN A 213.36.253.166
```

```
42sh$ dig starinix.org
```

```
;; ANSWER SECTION:  
starinix.org. 2334 IN A 213.36.253.166
```

Le cache

À vous !

```
42sh$ dig @9.9.9.9 volkastream.xyz
```

Quelles adresses trouvez-vous pour **volkastream.xyz** avec :

- Votre résolveur par défaut
- 1.1.1.1
- 8.8.8.8
- 9.9.9.9

DiG 9.10
Global options: +cmd
not answer:
→HEADER← opcode: QUERY, status:
Flags: qr rd ra ad; QUERY: 1, ANSWER: 2, AUTH:
OPT PSEUDOSECTION:
EDNS: version: 0, flags: do: 4096
QUESTION SECTION:
;; ANSWER SECTION:
nemunai.re. 345600 IN SOA nout.ra.nemunai.
nemunai.re. 345600 IN RRSIG SOA 10 2 345
87IMYoe4GS/h0kG1NamQ2vevNKxg/LLvao8rfXwfyiR5Zc6tDnI
/5P8iZh0gWBPqISEJLUClwsEAac1CGF6hX6gobyCGXS
vrrsh8L86Y+awsdcqpEK18YwFHexqk/GggiL
NNohM4P000vP1euNfYcxLMqQTi
TBMmZV1WE1X4+QK
FHexqk/G14



Essayons AdGuard Home

Les types d'enregistrements


```
42sh$ dig starlinux.org
```

```
;; ANSWER SECTION:  
starlinux.org. 2345 IN A 213.36.253.166
```

— Les types d'enregistrements —

```
42sh$ dig starlinux.org
```

```
;; ANSWER SECTION:  
starlinux.org. 2345 IN A 213.36.253.166
```

==

```
42sh$ dig starlinux.org A
```

```
;; ANSWER SECTION:  
starlinux.org. 2345 IN A 213.36.253.166
```

Les types d'enregistrements

```
42sh$ dig starlinux.org
```

```
;; ANSWER SECTION:  
starlinux.org. 2345 IN A 213.36.253.166
```

==

```
42sh$ dig starlinux.org
```

```
;; ANSWER SECTION:  
starlinux.org. 2345 IN A 213.36.253.166
```

Les types d'enregistrements

```
42sh$ dig starinux.org A
```

```
;; ANSWER SECTION:  
starinux.org. 2345 IN A 213.36.253.166 # IPv4
```

```
42sh$ dig starinux.org AAAA
```

```
;; QUESTION SECTION:  
;starinux.org. IN AAAA # IPv6
```

Les types d'enregistrements

```
42sh$ dig starinux.org A
```

```
;; ANSWER SECTION:  
starinux.org. 2345 IN A 213.36.253.166 # IPv4
```

```
42sh$ dig cours-de-latin.com AAAA
```

```
;; QUESTION SECTION:  
;cours-de-latin.com IN AAAA # IPv6
```

Les types d'enregistrements

```
42sh$ dig starinux.org A
```

```
;; ANSWER SECTION:  
starinux.org. 2345 IN A 213.36.253.166 # IPv4
```

```
42sh$ dig cours-de-latin.com AAAA
```

```
;; ANSWER SECTION:  
cours-de-latin.com IN AAAA 2a00:b6e0:1:20:4::1 # IPv6
```

Les types d'enregistrements

À vous !

```
42sh$ dig starinix.org AAAA
```

Quels sites sont-ils accessibles en IPv6 :

- google.com
- fnac.com
- laposte.com
- doctolib.com
- inria.fr
- github.com
- pagesjaunes.fr
- orange.fr
- sfr.fr
- free.fr
- www.impots.gouv.fr

```
42sh$ dig www.impots.gouv.fr AAAA
```

```
;; ANSWER SECTION:  
www.impots.gouv.fr. 11 IN CNAME www.impots.gouv.fr.edgesuite.net.  
www.impots.gouv.fr.edgesuite.net. 11 IN CNAME a1352.dscb.akamai.net.  
a1352.dscb.akamai.net. 11 IN AAAA 2a02:26f0:680:9e::5f64:8551  
a1352.dscb.akamai.net. 11 IN AAAA 2a02:26f0:680:9e::5f64:854a
```

Les types d'enregistrements


```
42sh$ dig www.impots.gouv.fr CNAME
```

```
;; ANSWER SECTION:  
www.impots.gouv.fr. 11 IN CNAME www.impots.gouv.fr.edgesuite.net.
```

— Les types d'enregistrements —

À vous !

```
42sh$ dig ping.happydns.fr
```

Décomposez les CNAME individuellement.
Que se passe-t-il ?

À vous !

```
42sh$ dig starinix.org MX
```

Quels sont les prestataires de courriers électroniques de ces sites :

- | | |
|---------------|------------------|
| • elysee.fr | • uber.com |
| • google.com | • pagesjaunes.fr |
| • gmail.com | • x.com |
| • fnac.com | • orange.fr |
| • github.com | • lavache.com |
| • doctolib.fr | |

```
42sh$ dig starlinux.org MX
```

```
;; ANSWER SECTION:  
starlinux.org. 11 IN MX 1 mail.starlinux.org.  
starlinux.org. 11 IN MX 5 smtp.starlinux.org.
```

L'enregistrement MX

```
42sh$ dig starinux.org MX
```

```
;; ANSWER SECTION:  
starinux.org. 11 IN MX 1 mail.starinux.org.  
starinux.org. 11 IN MX 5 smtp.starinux.org.
```

Quel serveur sera joint en premier ?

L'enregistrement MX

```
42sh$ dig isinternetonfire.com TXT
```

```
42sh$ dig lenovo.com TXT
```

L'enregistrement TXT

```
42sh$ dig isinternetonfire.com TXT
```

```
42sh$ dig lenovo.com TXT
```

```
42sh$ dig _spf.gandi.net TXT
```

L'enregistrement TXT

```
42sh$ dig example.com SOA
```

```
;; ANSWER SECTION:
example.com. 3600 IN SOA (
    ns.icann.org.      # Nom du serveur DNS primaire
    noc.dns.icann.org. # Adresse email du responsable
    2025011670         # Numéro de série de la zone
    7200               # Temps de rafraîchissement
    3600               # Temps entre 2 tentatives infructueuses
    1209600            # Durée avant l'expiration
    3600 # TTL de mise en cache d'une réponse négative
)
```

L'enregistrement SOA

[illegible][illegible][illegible]

À vous !

```
42sh$ dig starlinux.org ANY
```

À vous !

```
42sh$ dig starinux.org ANY
```

Listez tous les enregistrements du domaine `google.fr` :

- _____
- _____
- _____
- _____
- _____
- _____

À vous !

```
42sh$ dig starlinux.org ANY
```

Listez tous les enregistrements du domaine `debian.org` :

- _____
- _____
- _____
- _____
- _____
- _____

```
42sh$ dig starlinux.org A
```

```
;; ANSWER SECTION:  
starlinux.org. 1234 IN A 213.36.253.166
```

Les enregistrements DNS

```
42sh$ dig starlinux.org A
```

```
;; ANSWER SECTION:  
starlinux.org. 1234 IN A 213.36.253.166
```

Les enregistrements DNS

DiG 9.10
Global options: +cmd
not answer:
→HEADER← opcode: QUERY, status:
Flags: qr rd ra ad; QUERY: 1, ANSWER: 2, AUTH:
OPT PSEUDOSECTION:
EDNS: version: 0, flags: do: 4096
QUESTION SECTION:
;; nemunai.re.
;; ANSWER SECTION:
nemunai.re. 345600 IN SOA nout.ra.nemunai.
nemunai.re. 345600 IN RRSIG SOA 10 2 345
87IMYoe4GS/h0kG1NamQ2vevNKxg/LLvao8rfXwfyiR5Zc6tDnI
/5P8iZh0gWBPqISEJLUClwsEAac1CGF6hX6gobyCGXS
vrrsh8L86Y+awsdcqpEK18YwFHexqk/GggiL
NNohM4P000vP1euNfYcxLMqQTi
TbmMzV1WE1X4+QK
FHexqk/G14



Nom de domaine
(FQDN)

TTL

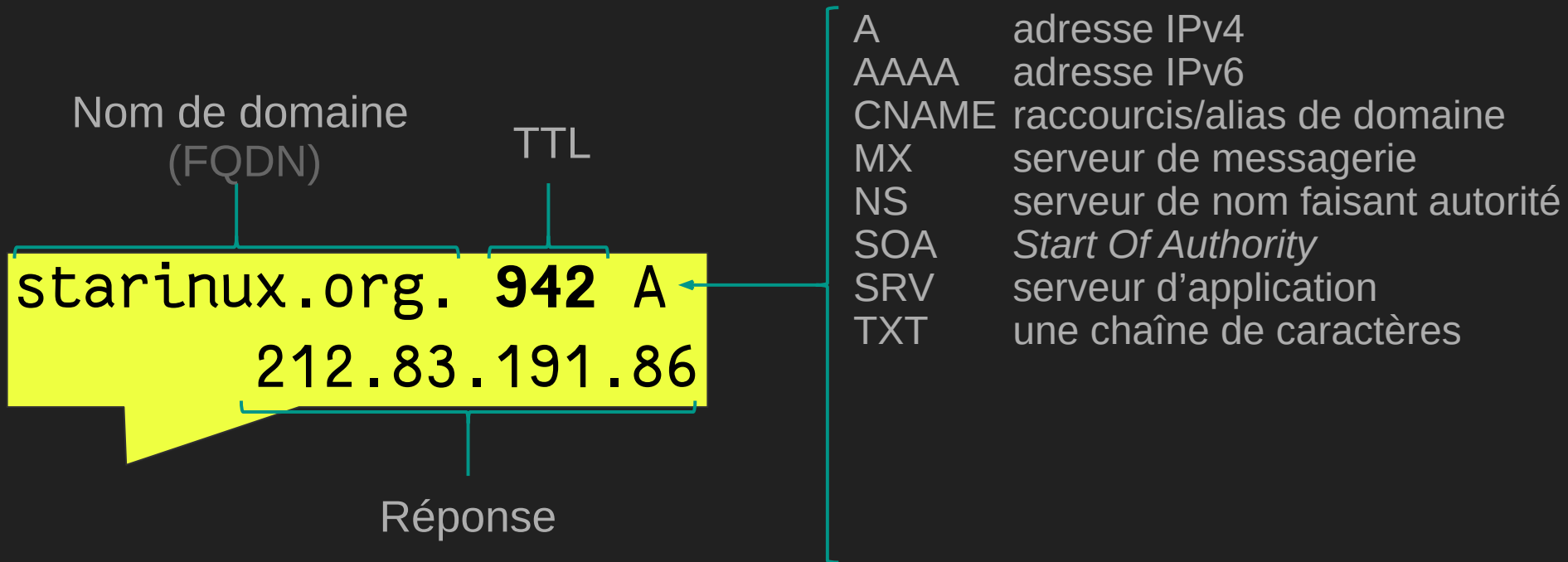
starinix.org. 942 A

Type d'enregistrement

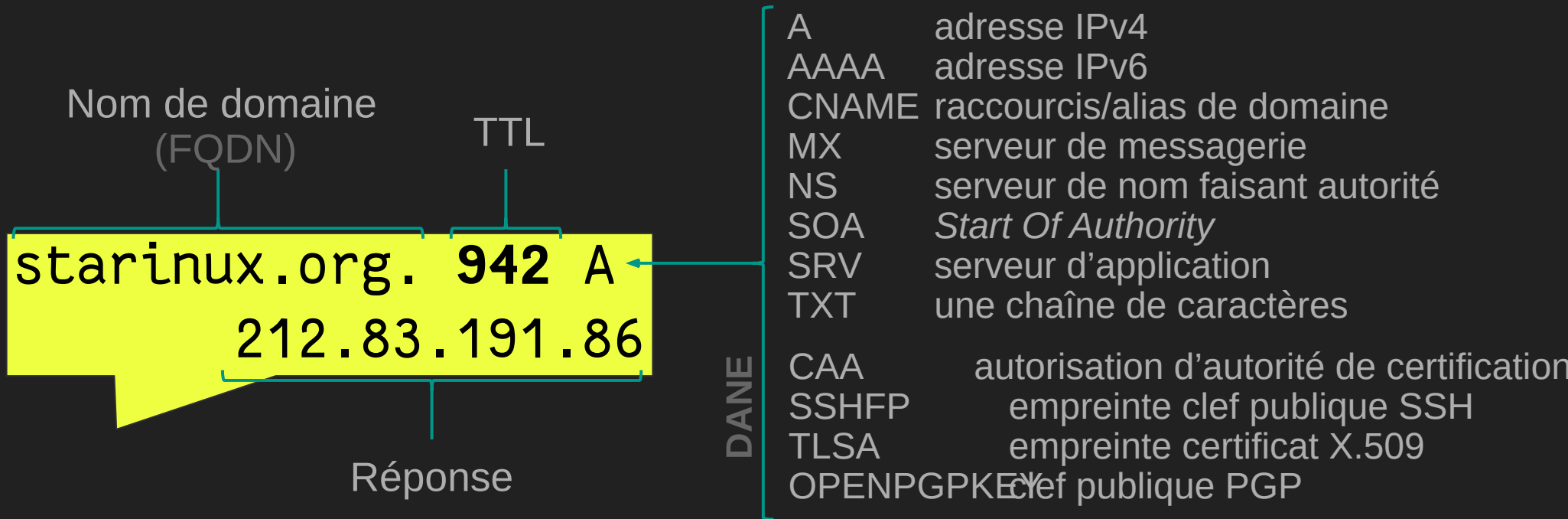
212.83.191.86

Réponse

Réponse DNS



Réponse DNS

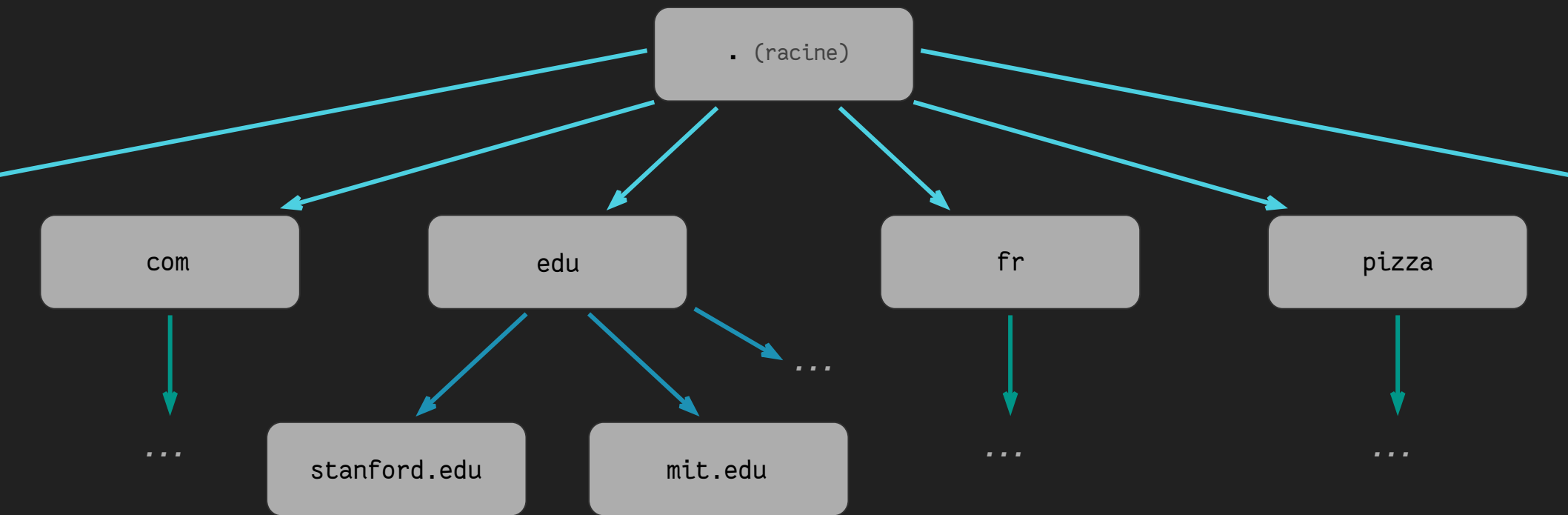


Réponse DNS

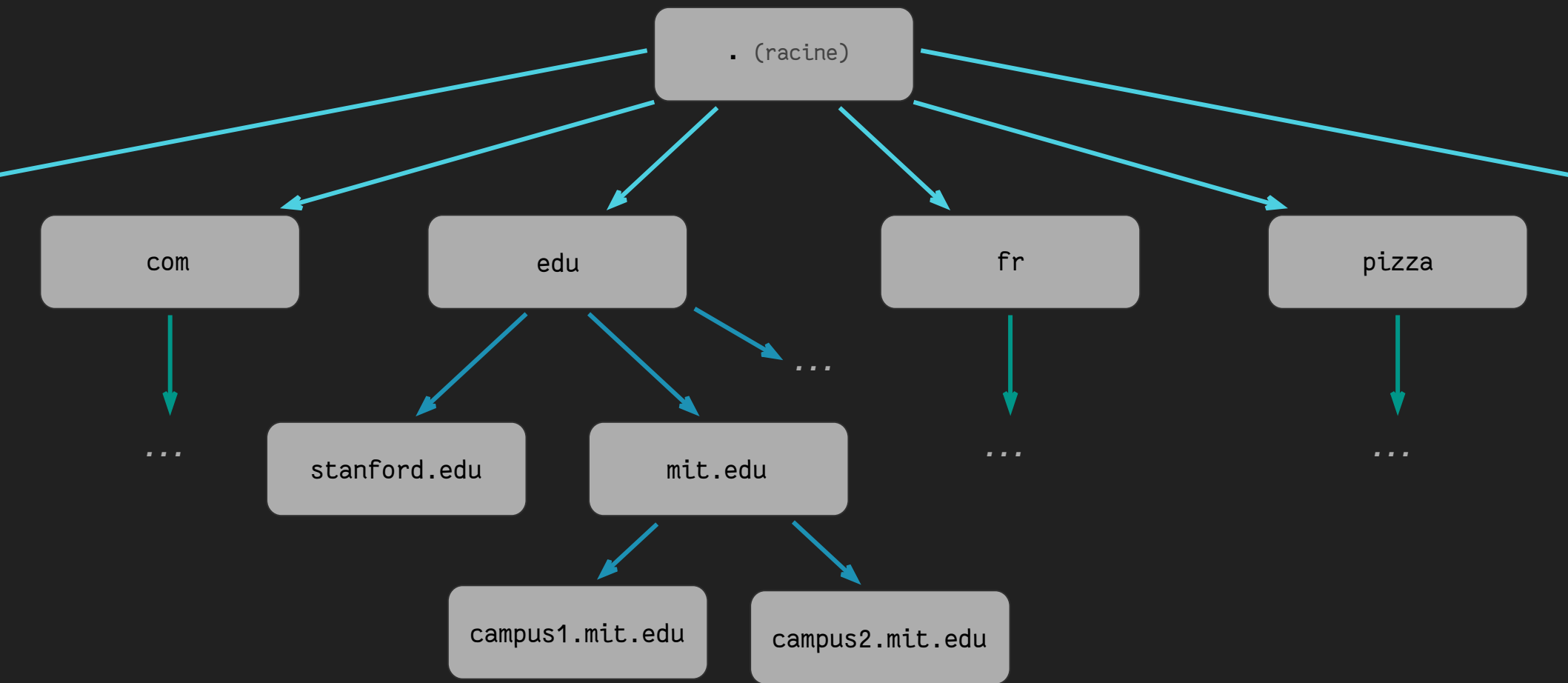
La racine du DNS

• (racine)

L'arbre du **DNS**



L'arbre du **DNS**

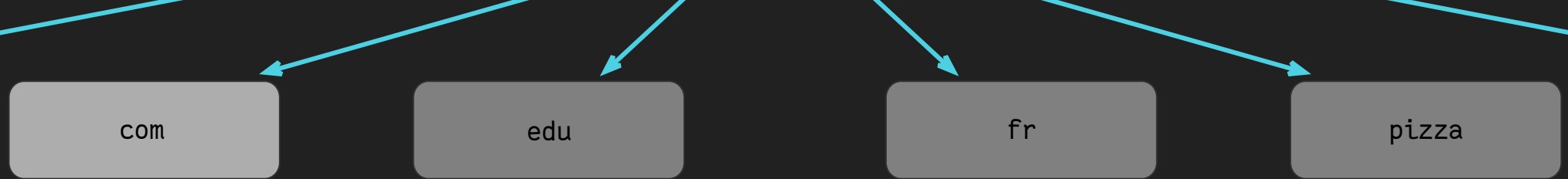


L'arbre du **DNS**

. (racine)

```
. 3600000 NS A.ROOT-SERVERS.NET.  
. 3600000 NS B.ROOT-SERVERS.NET.  
. 3600000 NS C.ROOT-SERVERS.NET.  
. 3600000 NS D.ROOT-SERVERS.NET.  
. 3600000 NS E.ROOT-SERVERS.NET.  
. 3600000 NS F.ROOT-SERVERS.NET.  
. 3600000 NS G.ROOT-SERVERS.NET.  
. 3600000 NS H.ROOT-SERVERS.NET.  
. 3600000 NS I.ROOT-SERVERS.NET.  
. 3600000 NS J.ROOT-SERVERS.NET.  
. 3600000 NS K.ROOT-SERVERS.NET.  
. 3600000 NS L.ROOT-SERVERS.NET.  
. 3600000 NS M.ROOT-SERVERS.NET.
```

L'arbre du **DNS**



com.	172800	IN	NS	a.gtld-servers.net.
com.	172800	IN	NS	b.gtld-servers.net.
com.	172800	IN	NS	c.gtld-servers.net.
com.	172800	IN	NS	d.gtld-servers.net.
com.	172800	IN	NS	f.gtld-servers.net.
com.	172800	IN	NS	f.gtld-servers.net.
com.	172800	IN	NS	g.gtld-servers.net.
com.	172800	IN	NS	h.gtld-servers.net.
com.	172800	IN	NS	i.gtld-servers.net.
com.	172800	IN	NS	j.gtld-servers.net.
com.	172800	IN	NS	k.gtld-servers.net.
com.	172800	IN	NS	l.gtld-servers.net.
com.	172800	IN	NS	m.gtld-servers.net.

L'arbre du DNS



```
fr.      172800 IN  NS  d.nic.fr.  
fr.      172800 IN  NS  f.ext.nic.fr.  
fr.      172800 IN  NS  g.ext.nic.fr.
```

L'arbre du **DNS**

On achète chez un **bureau d'enregistrement** (ou *registrar*)



OVH.com



Scaleway



namecheap

Le
Bureau



Et de très nombreux autres...

Le bureau d'enregistrement est l'intermédiaire technique qui met à jour le **registre** (ou *registry*)

com



VERISIGN

fr



Internet
made in France

de

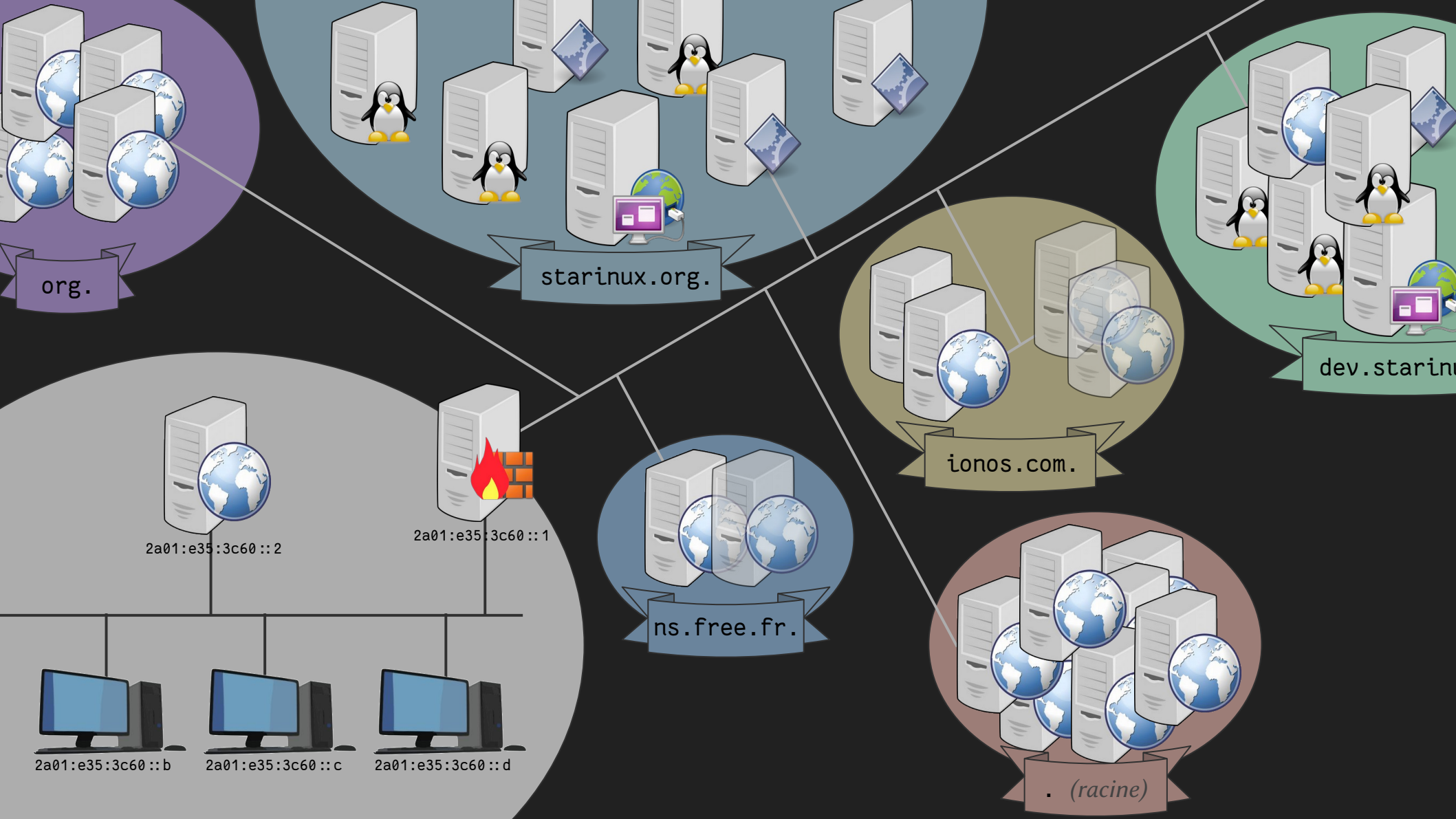


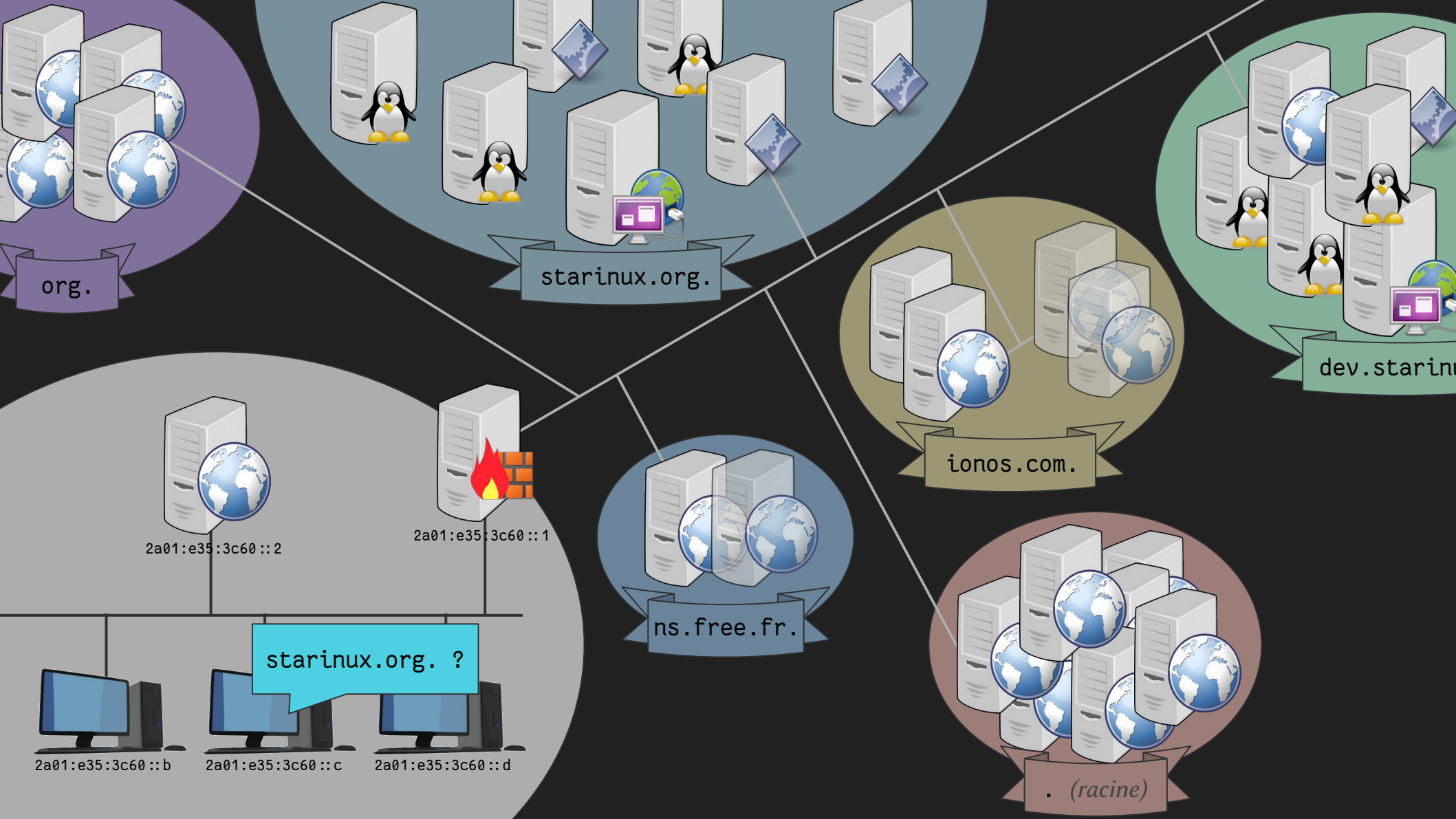
pizza

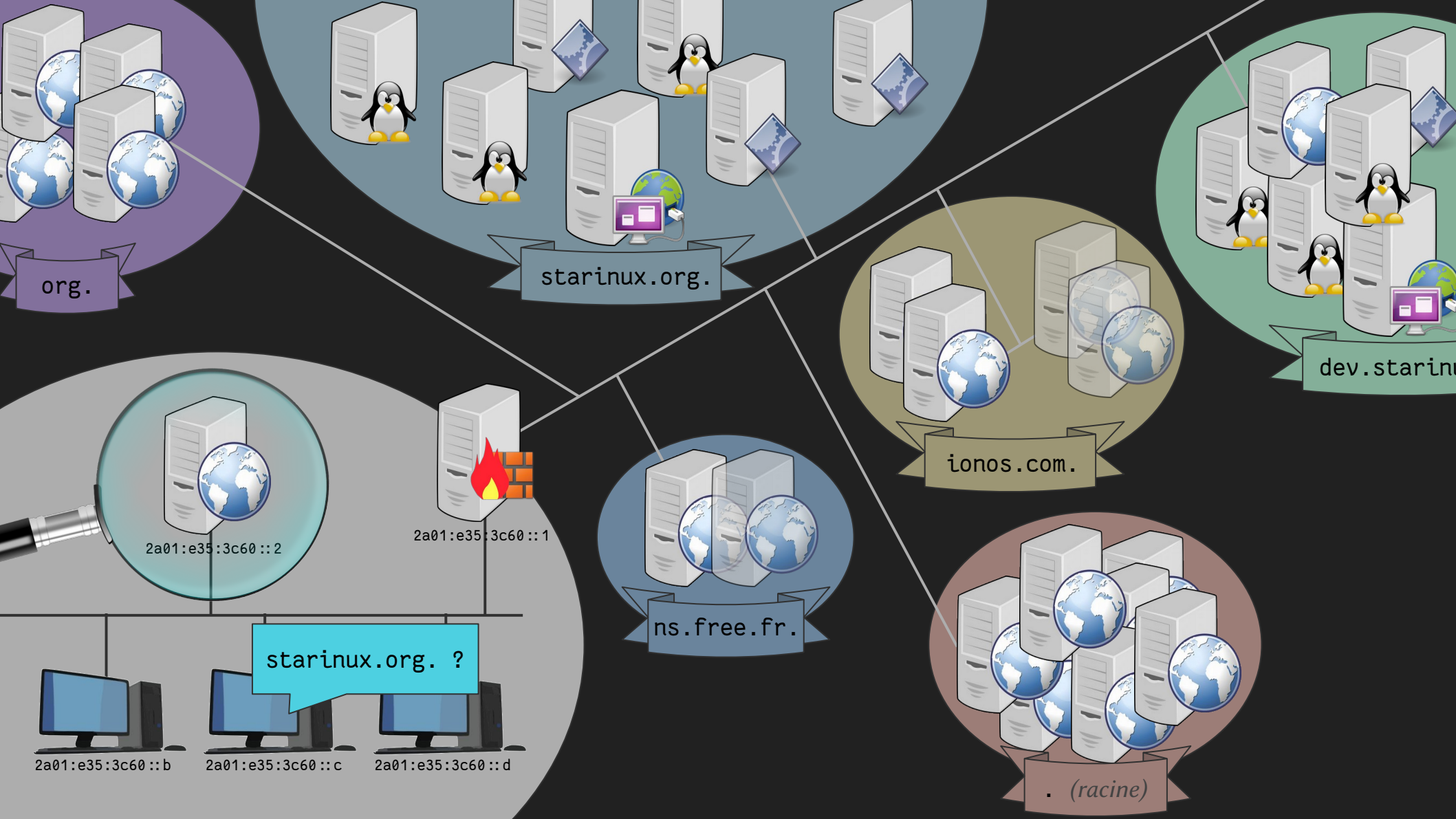


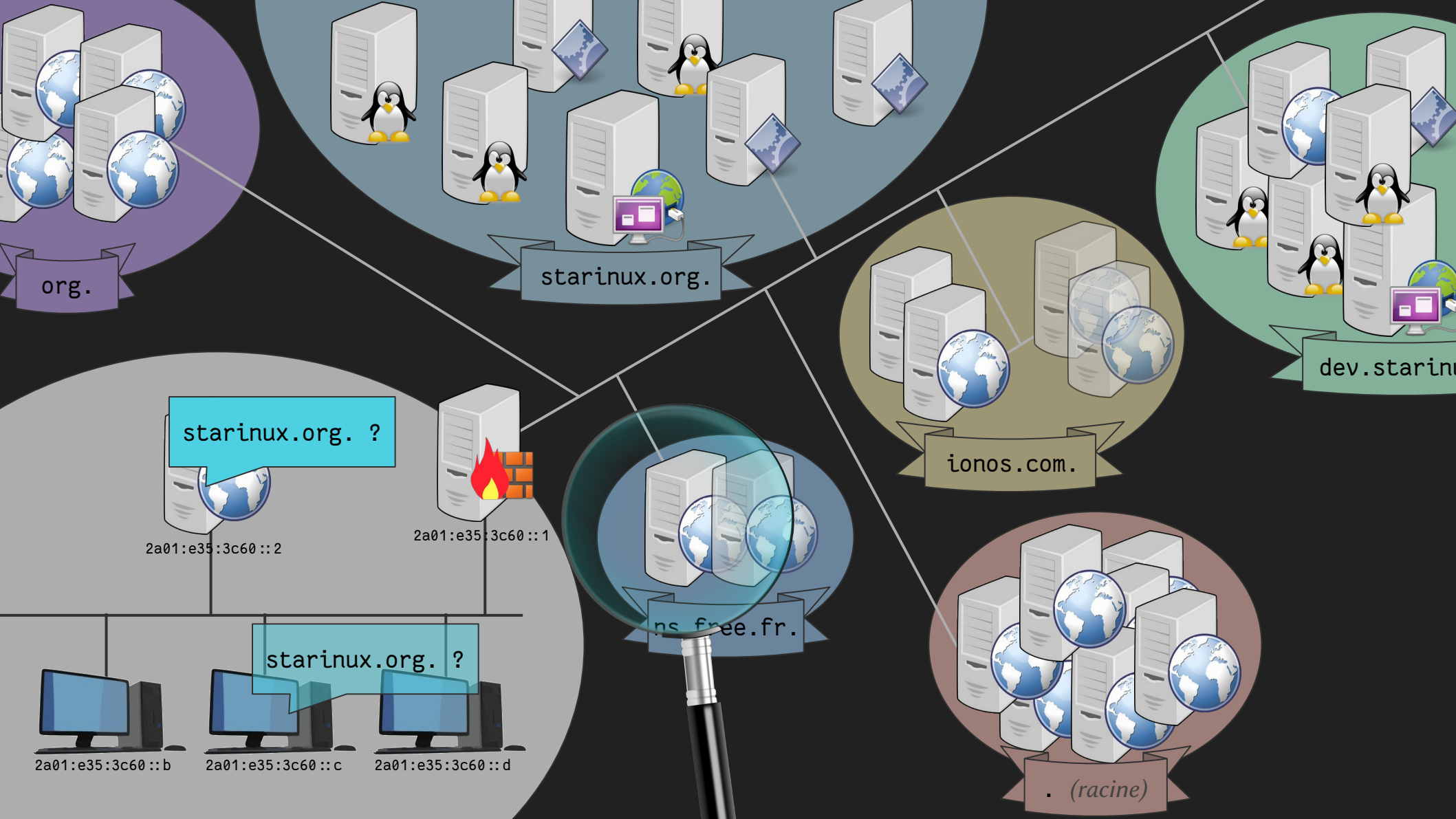
Les entités du **DNS**

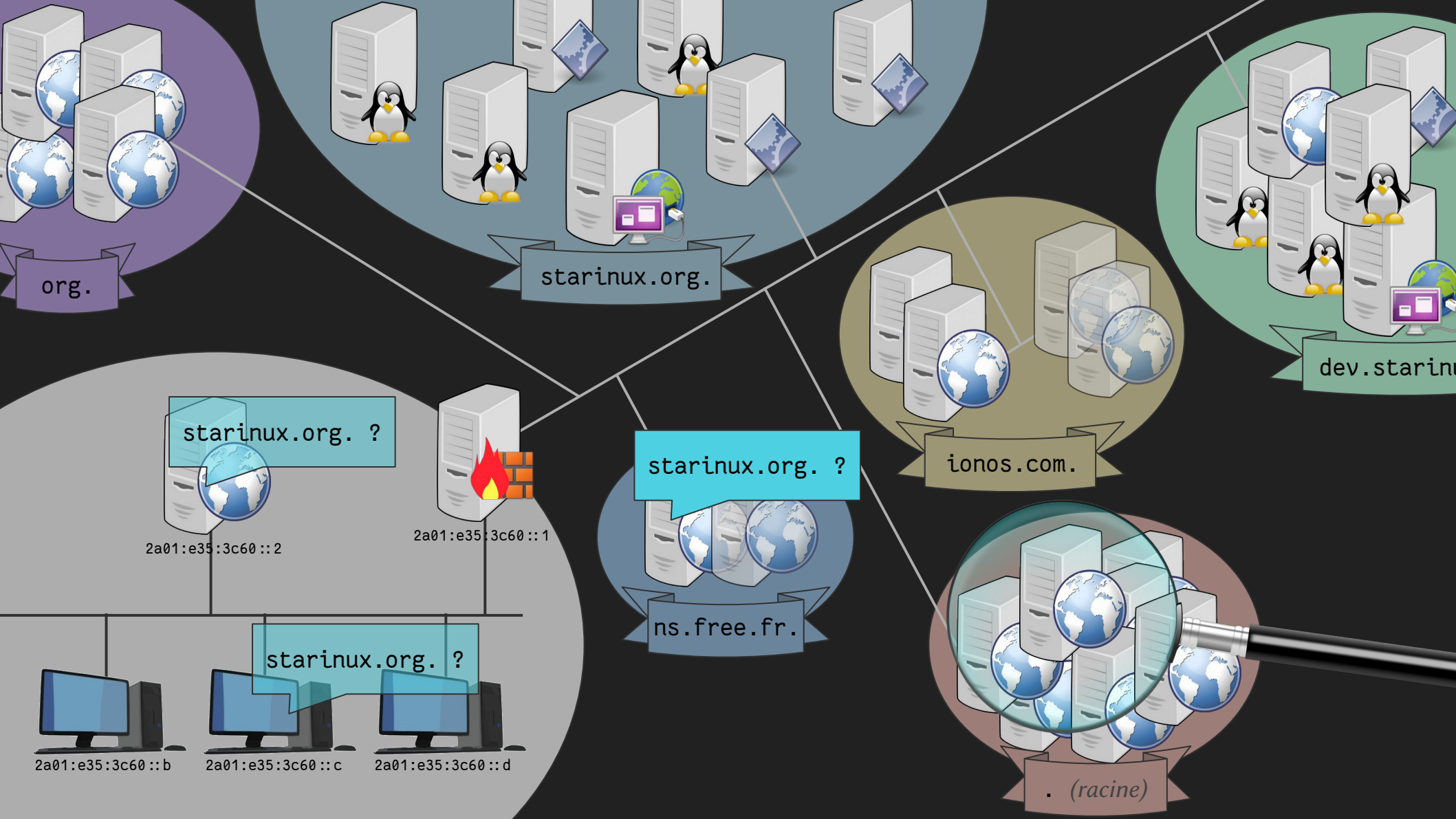
La résolution d'un nom

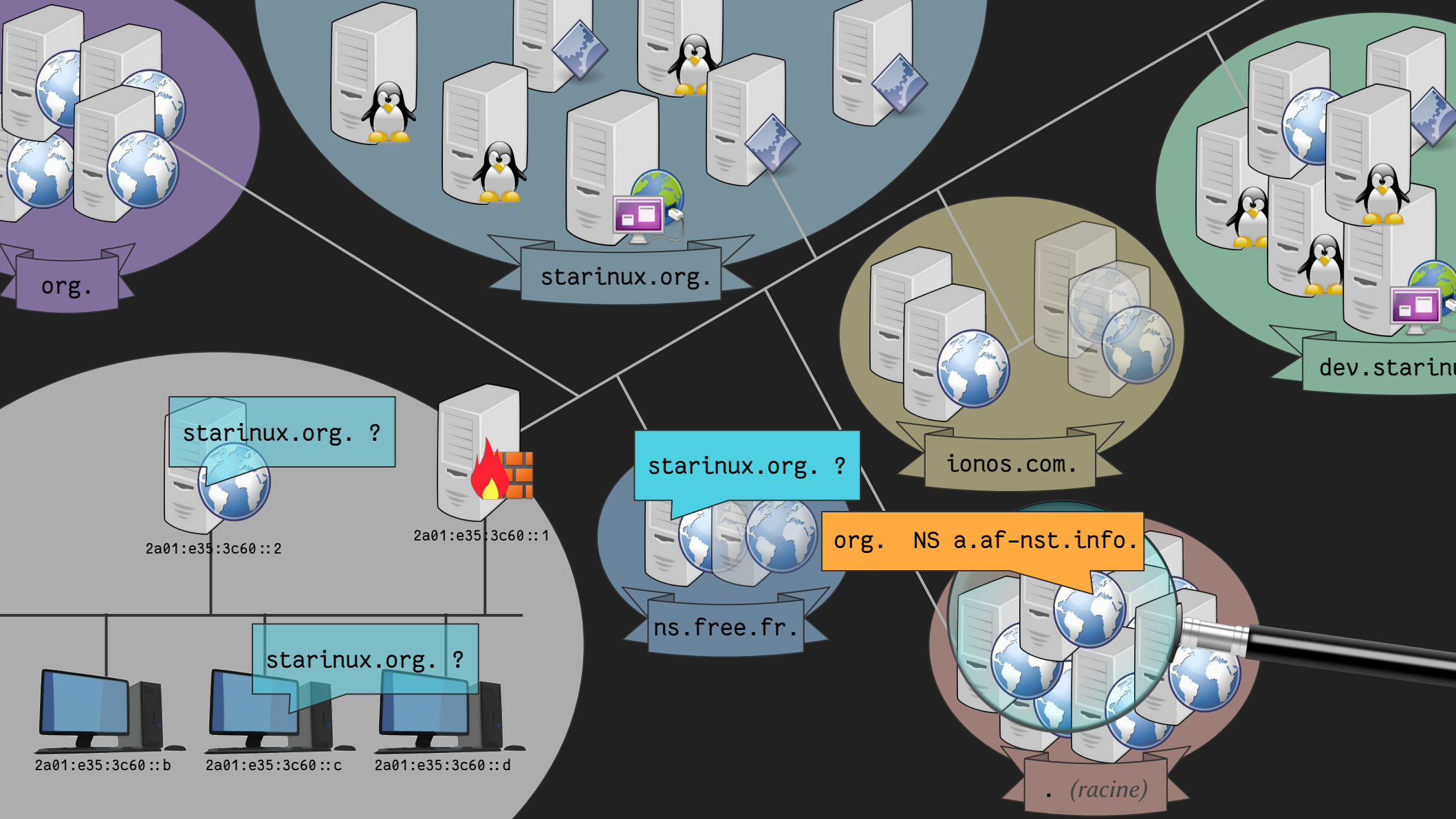


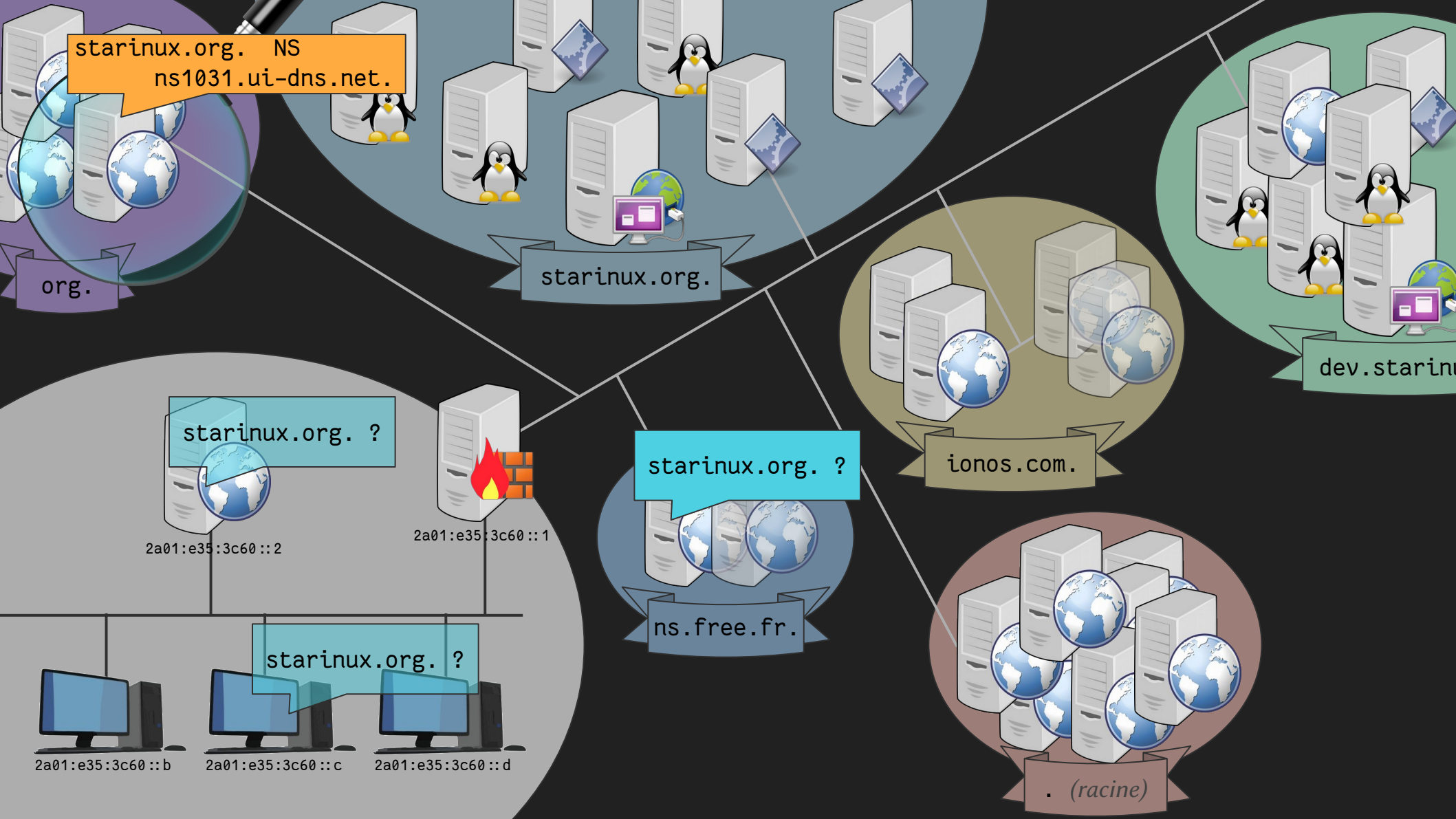


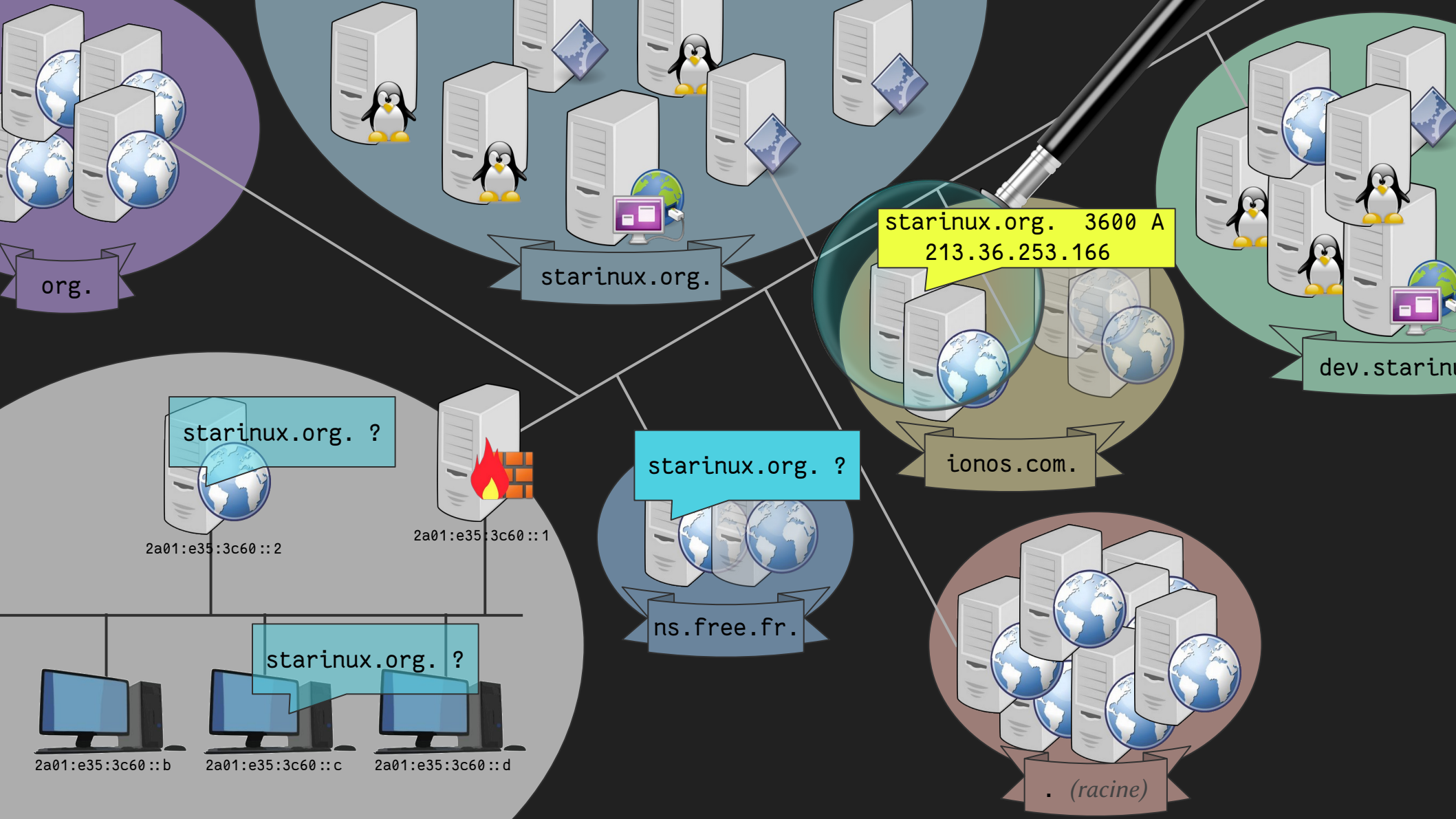


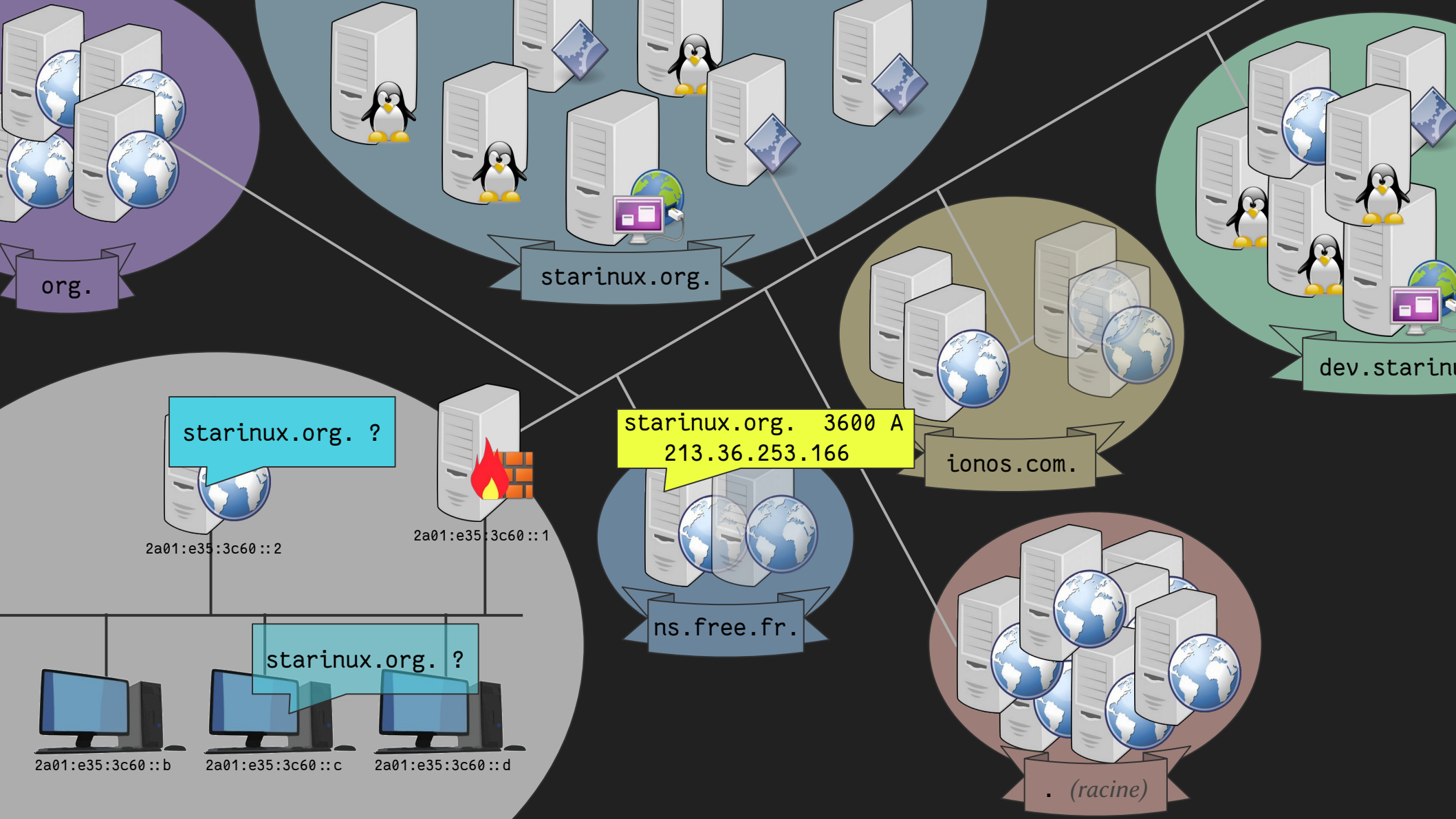












org.

starinux.org.

dev.starinux.org.

ionos.com.

starinux.org. 3600 A
213.36.253.166

ns.free.fr.

starinux.org. ?

starinux.org. ?

2a01:e35:3c60::2

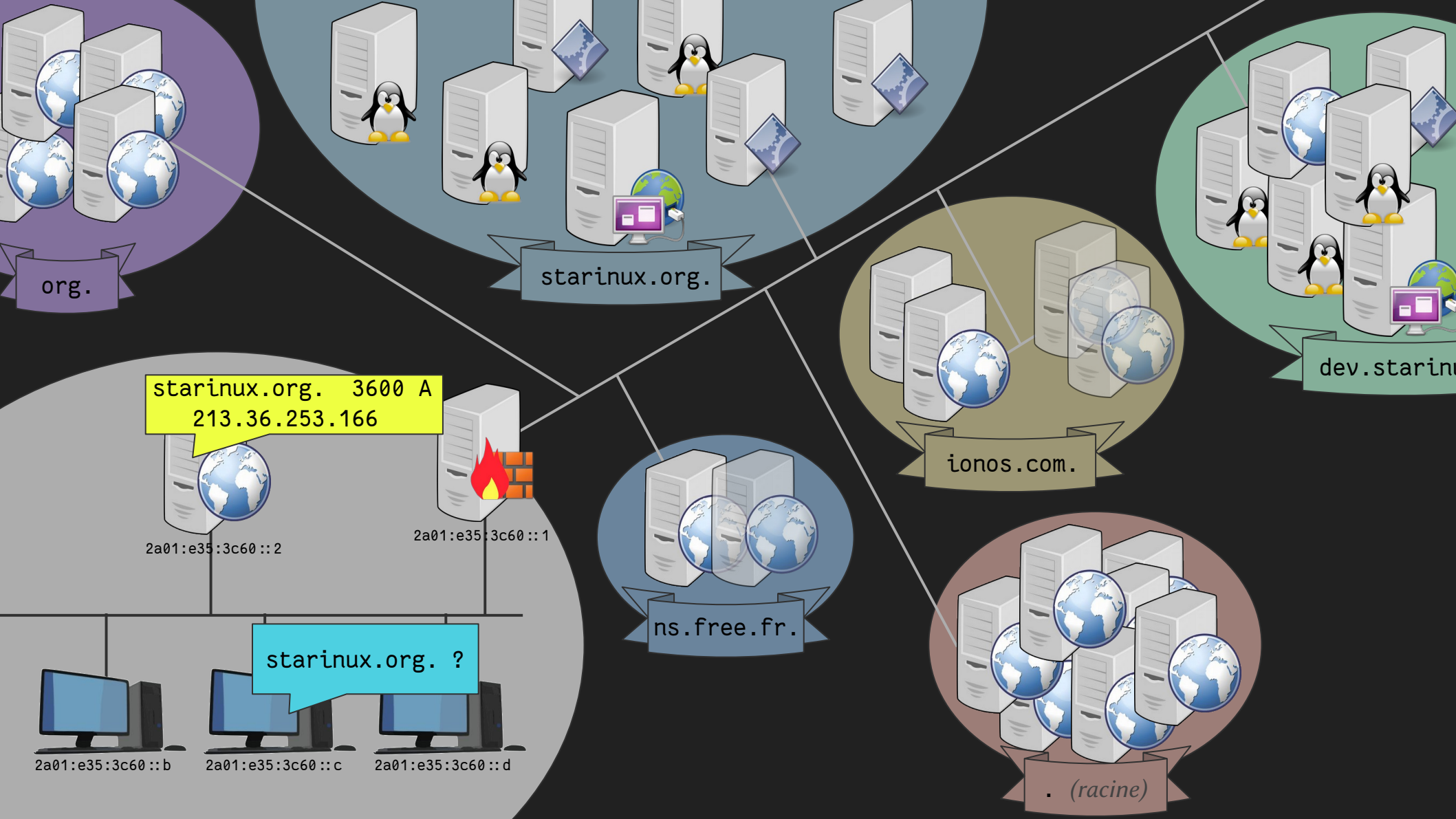
2a01:e35:3c60::1

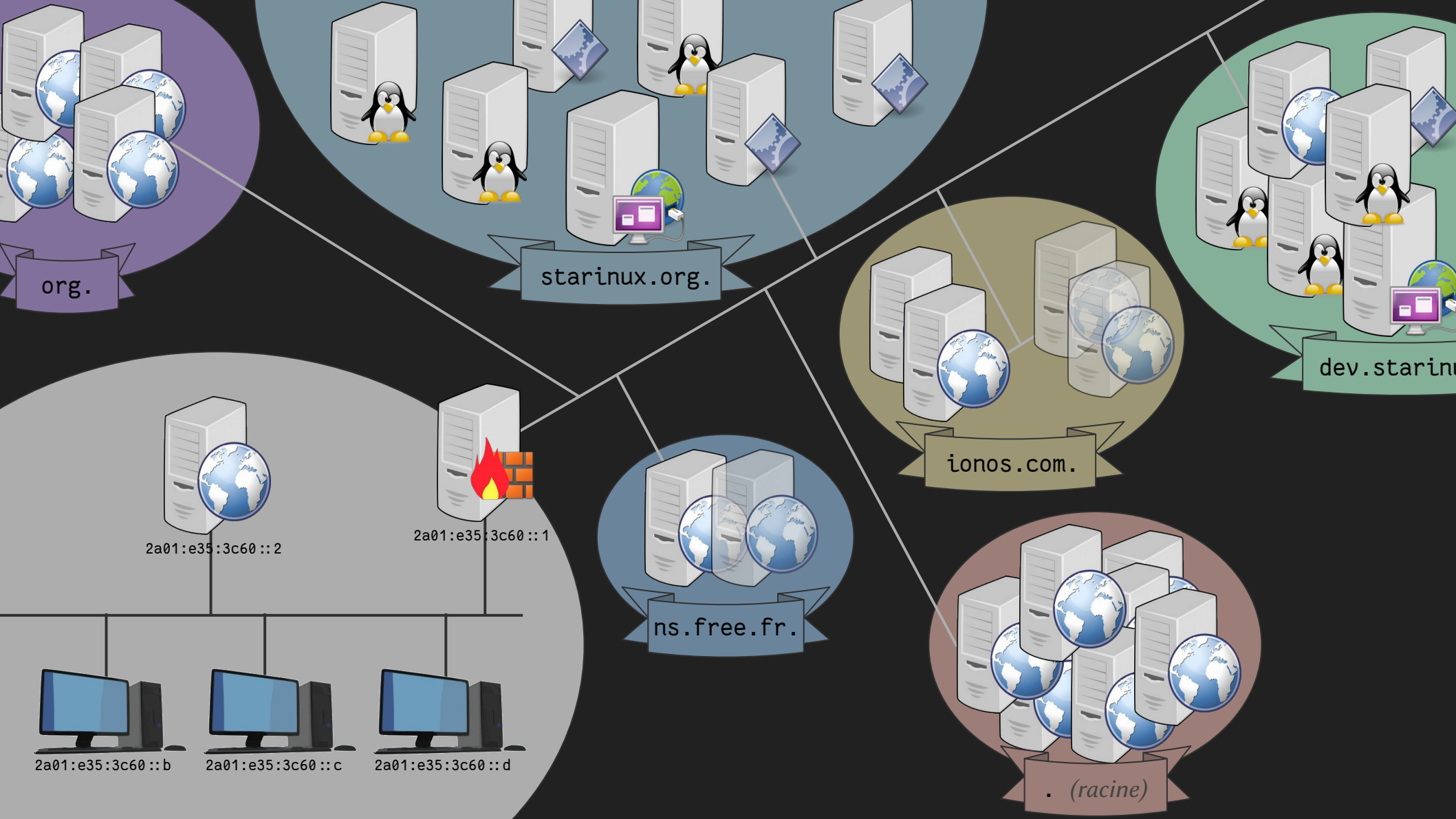
2a01:e35:3c60::b

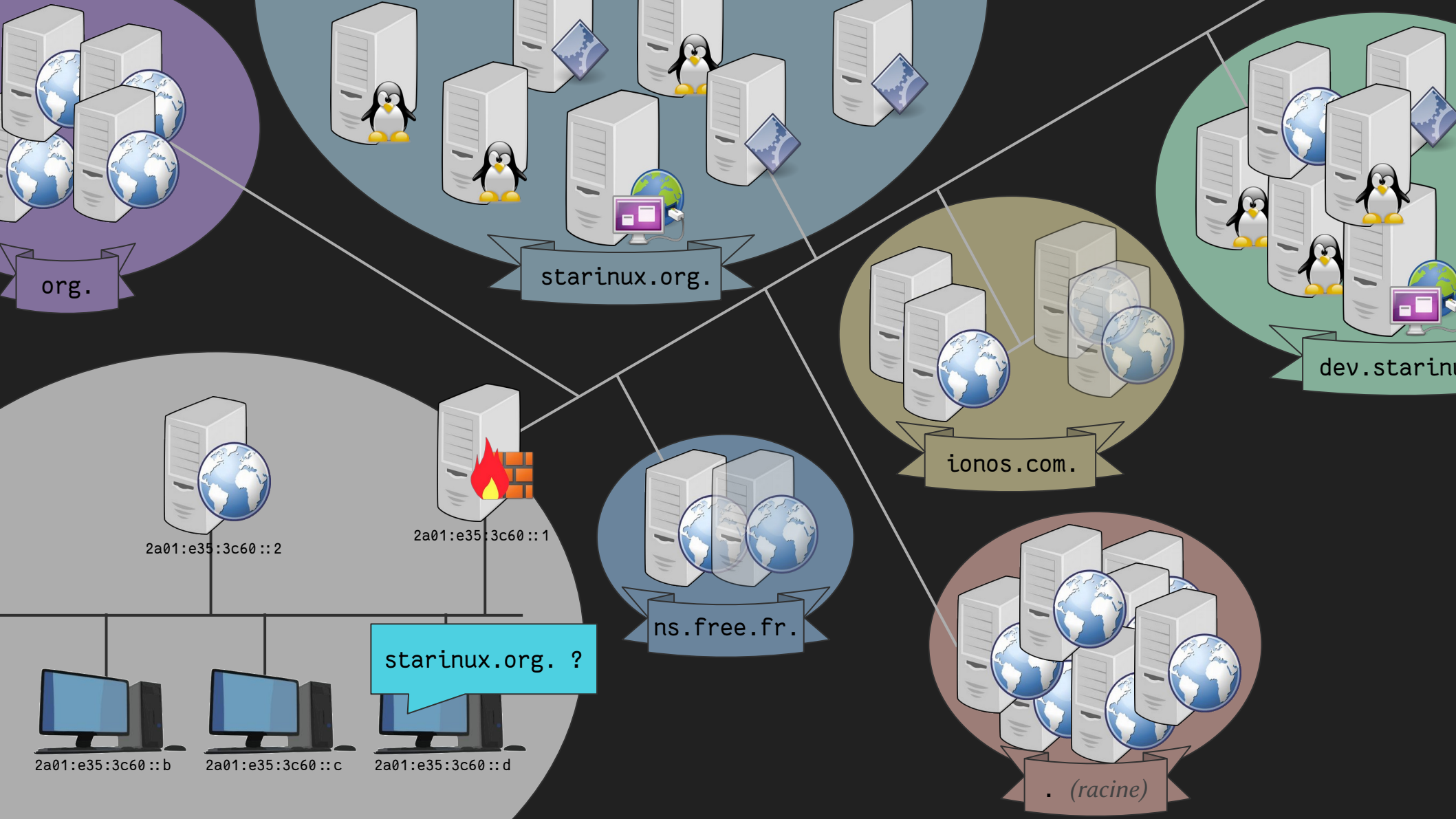
2a01:e35:3c60::c

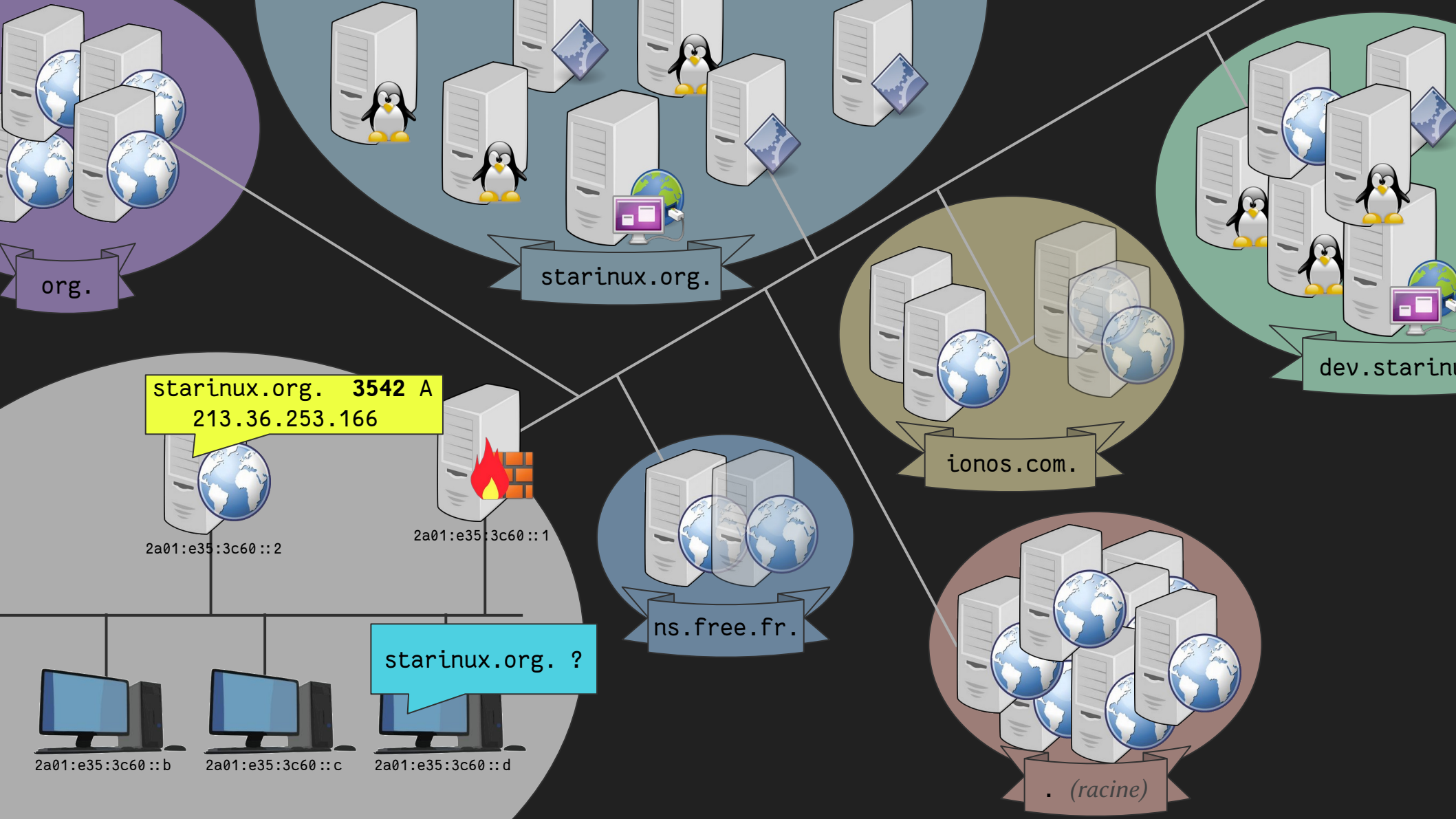
2a01:e35:3c60::d

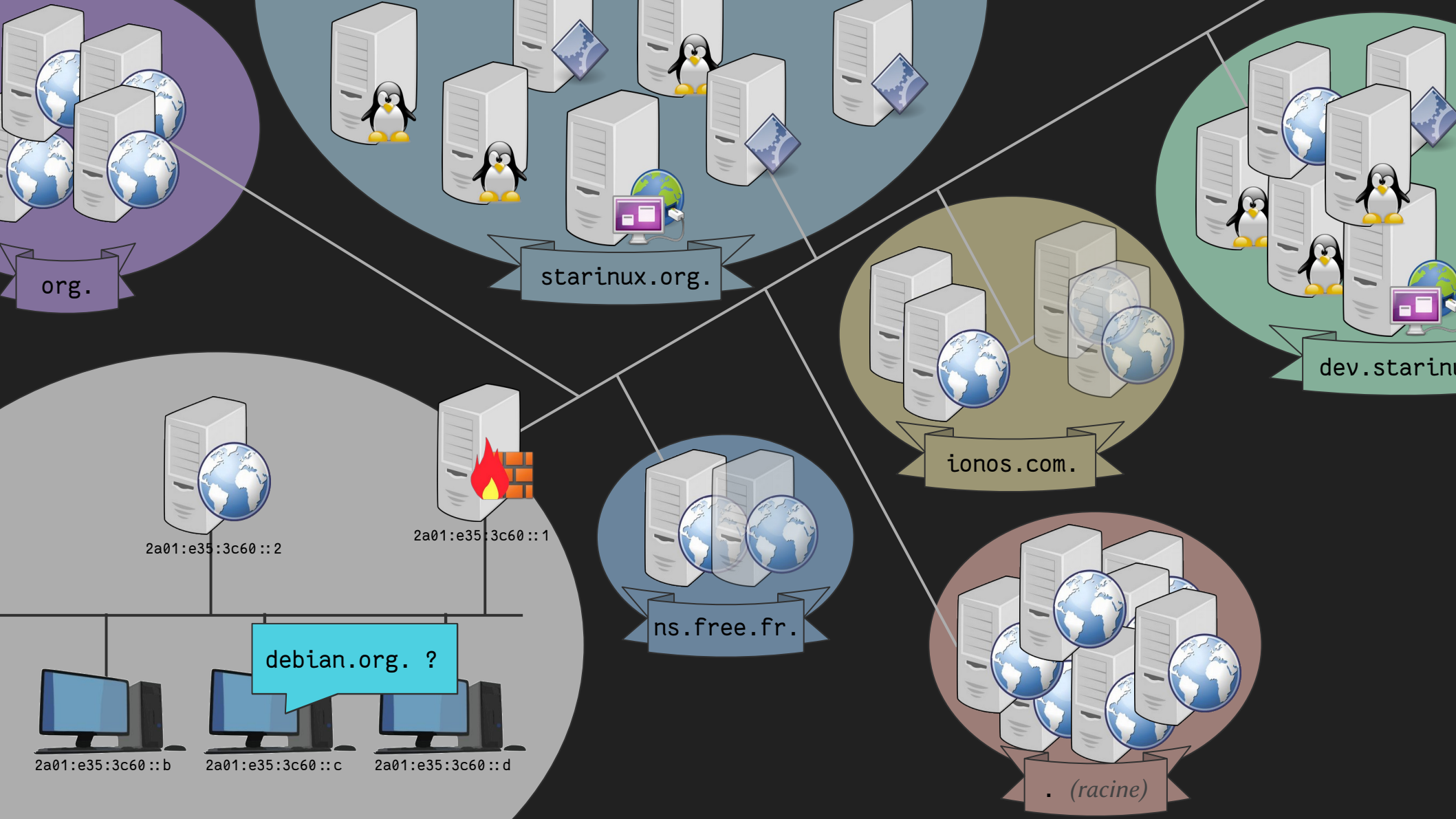
. (racine)

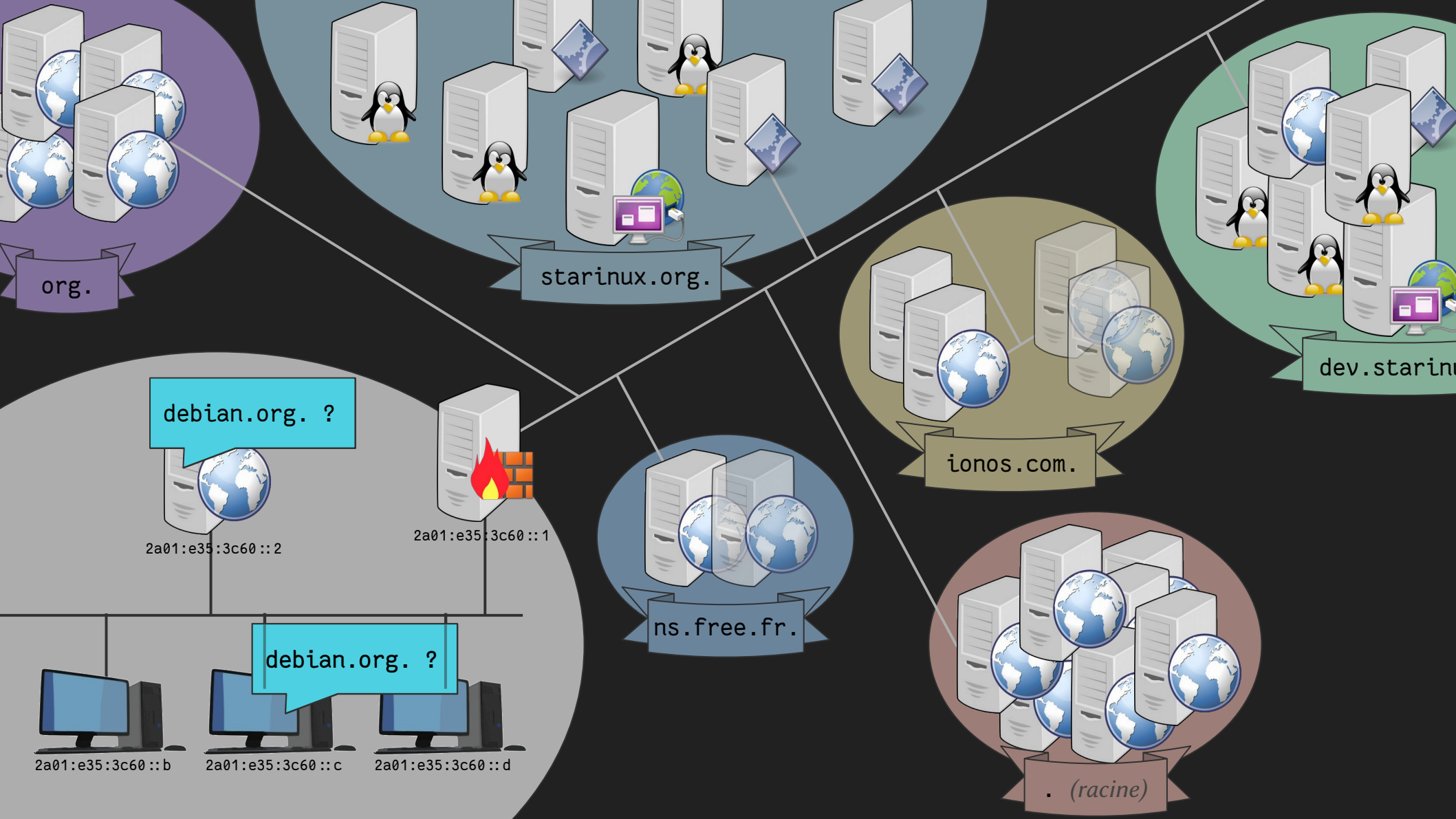


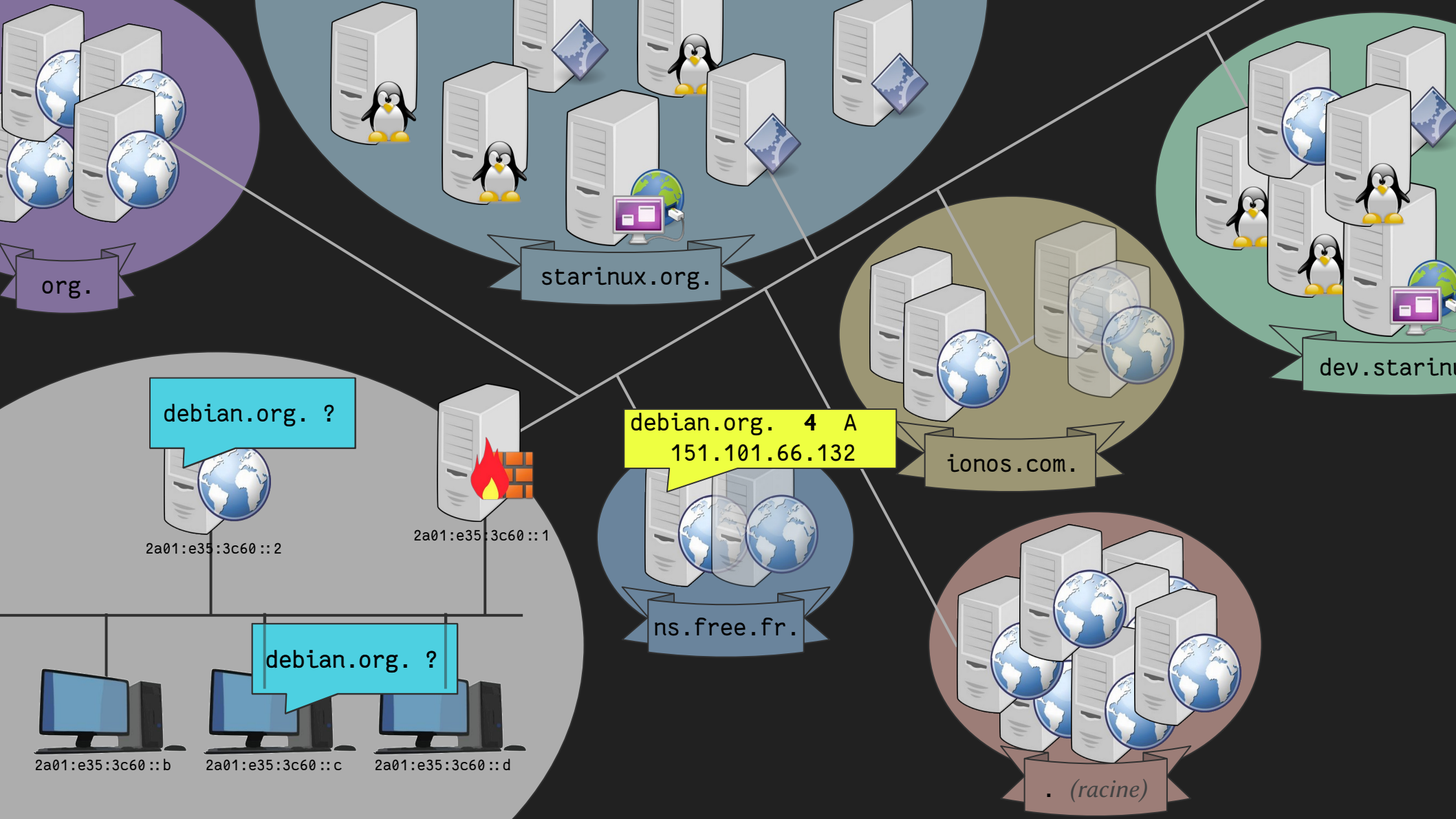


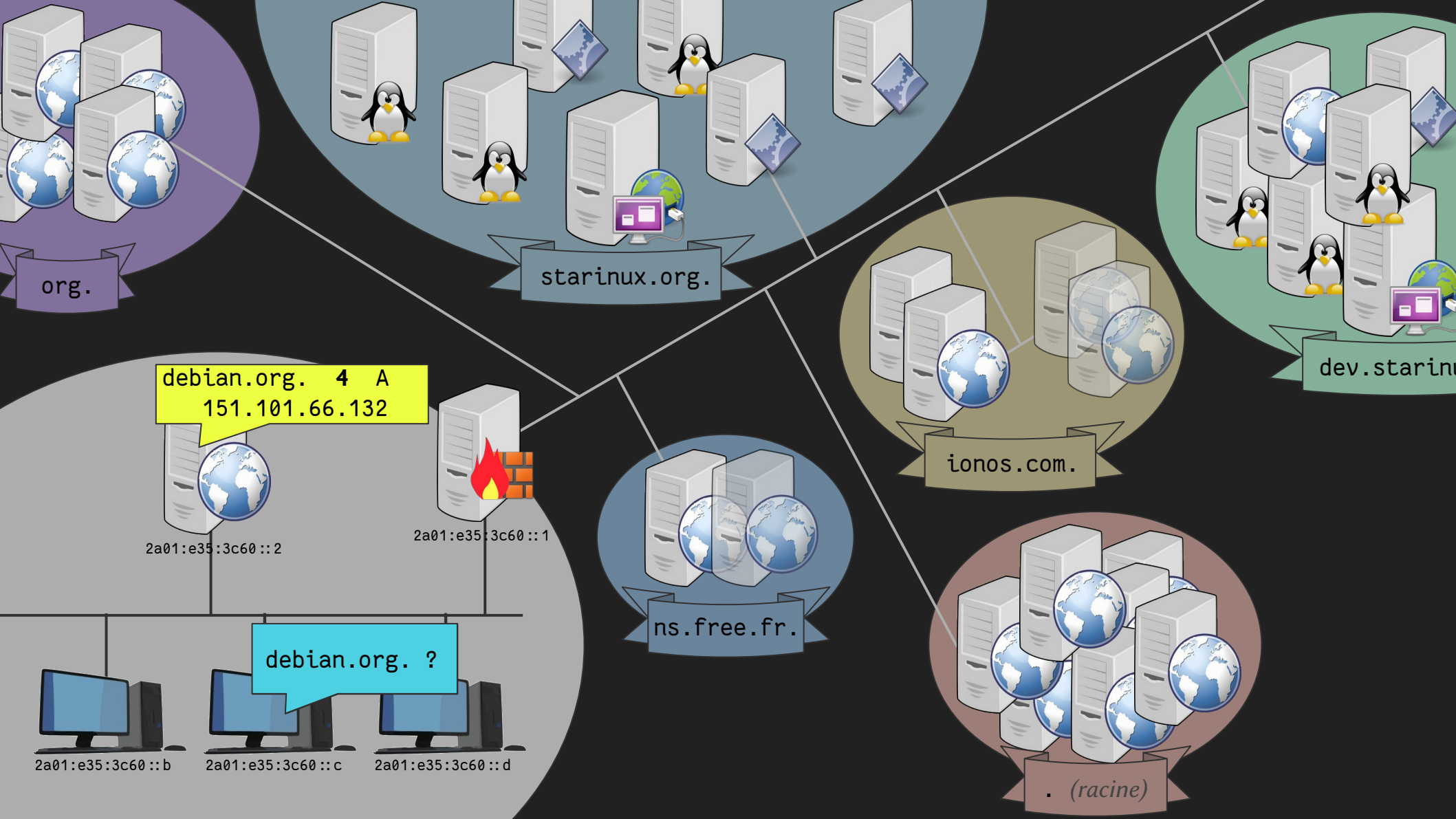


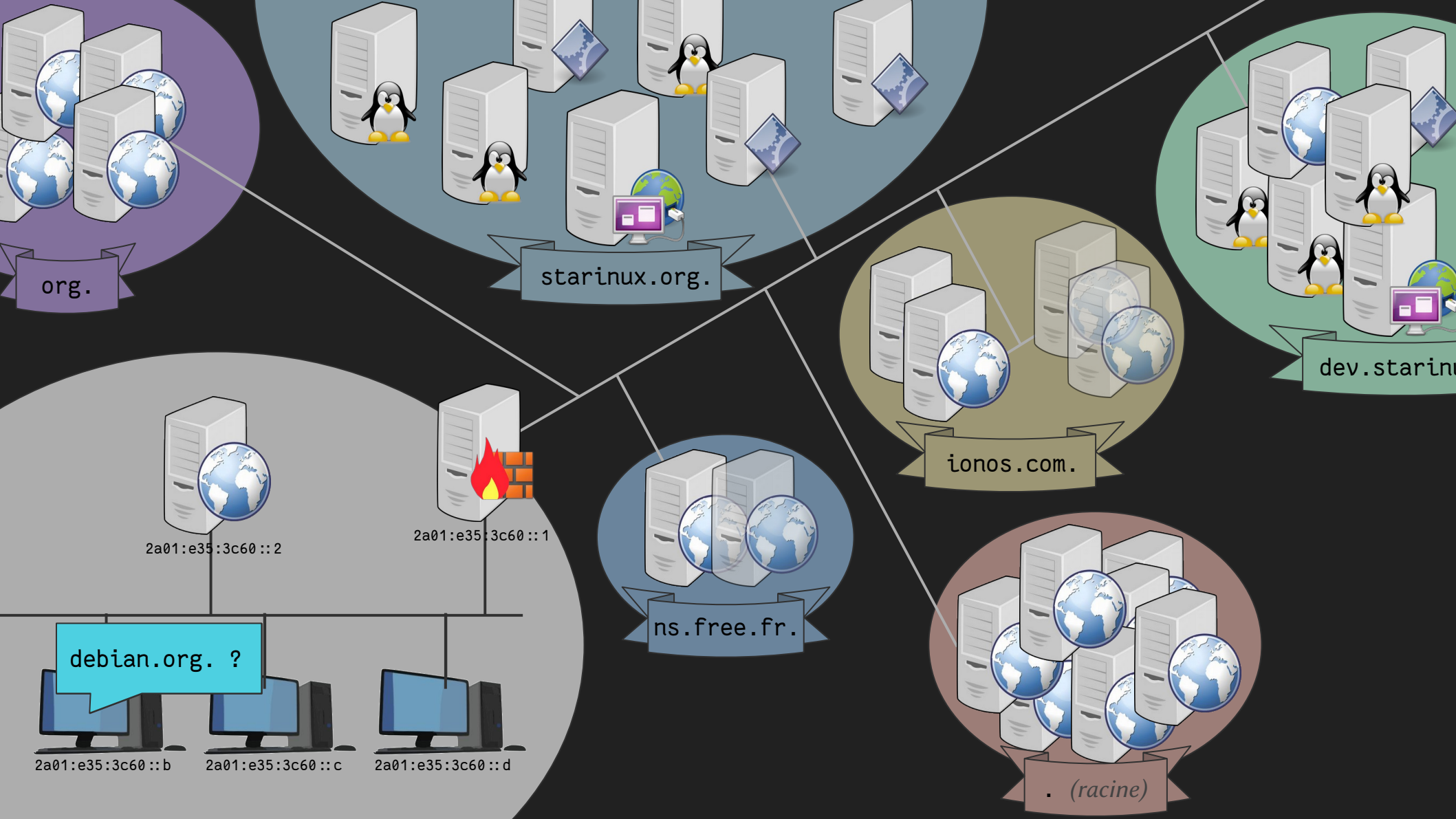












Exercices

debian.org. MX ?

debian.org. MX ?

```
debian.org. 28800 IN MX 10 muffat.debian.org.  
debian.org. 28800 IN MX 5  mitropoulos.debian.org.  
debian.org. 28800 IN MX 10 mailly.debian.org.
```


debian.org. MX ?

debian.org.	28800	IN	MX 10	muffat.debian.org.
debian.org.	28800	IN	MX 5	mitropoulos.debian.org.
debian.org.	28800	IN	MX 10	mailly.debian.org.

précédence

cible

debian.org. ? ?

debian.org.	300	IN	? 2a04:4e42:200::644
debian.org.	300	IN	? 2a04:4e42:400::644
debian.org.	300	IN	? 2a04:4e42:600::644
debian.org.	300	IN	? 2a04:4e42::644

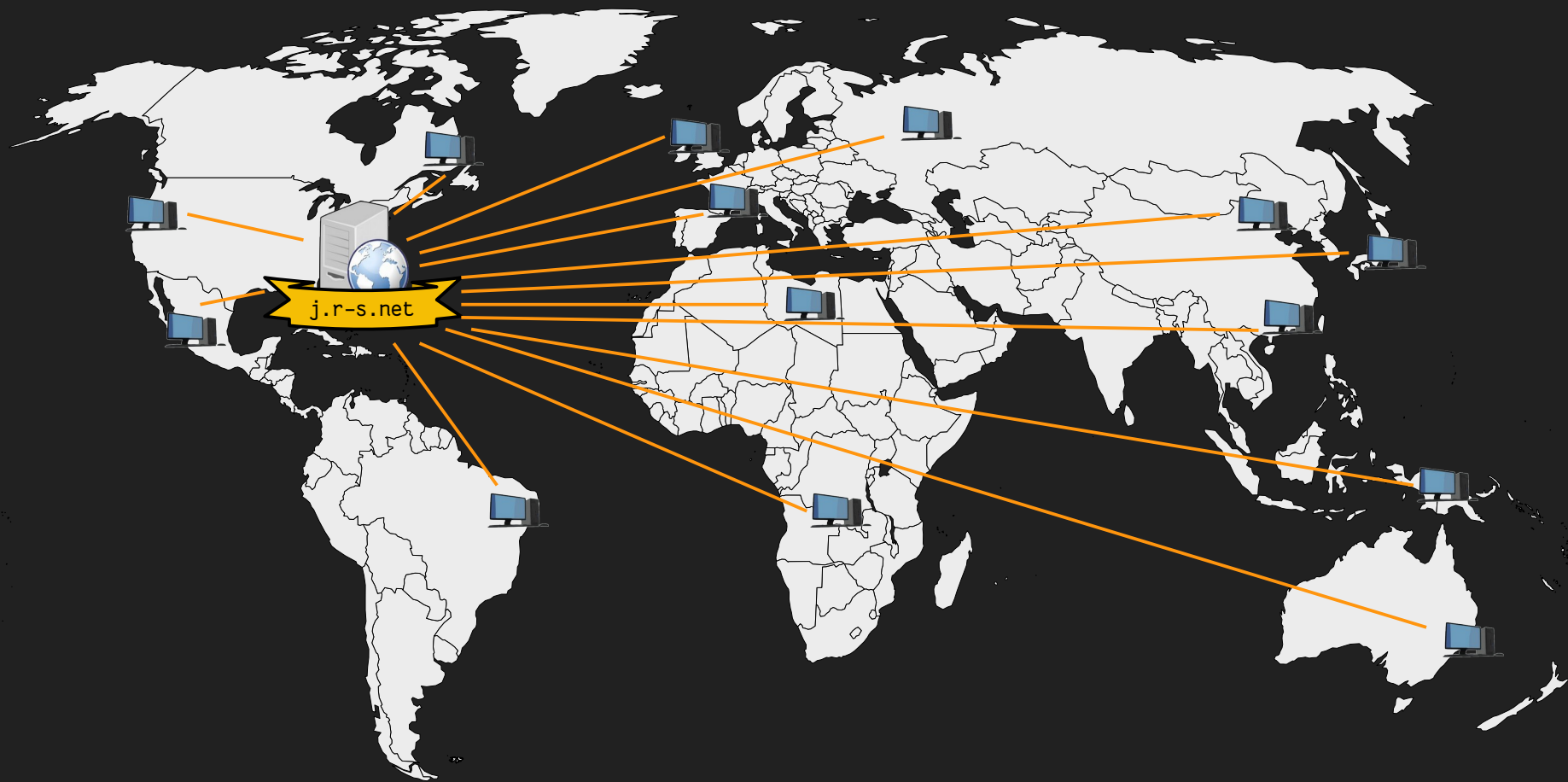
debian.org. AAAA

```
debian.org.    300    IN      AAAA    2a04:4e42:200::644
debian.org.    300    IN      AAAA    2a04:4e42:400::644
debian.org.    300    IN      AAAA    2a04:4e42:600::644
debian.org.    300    IN      AAAA    2a04:4e42::644
```

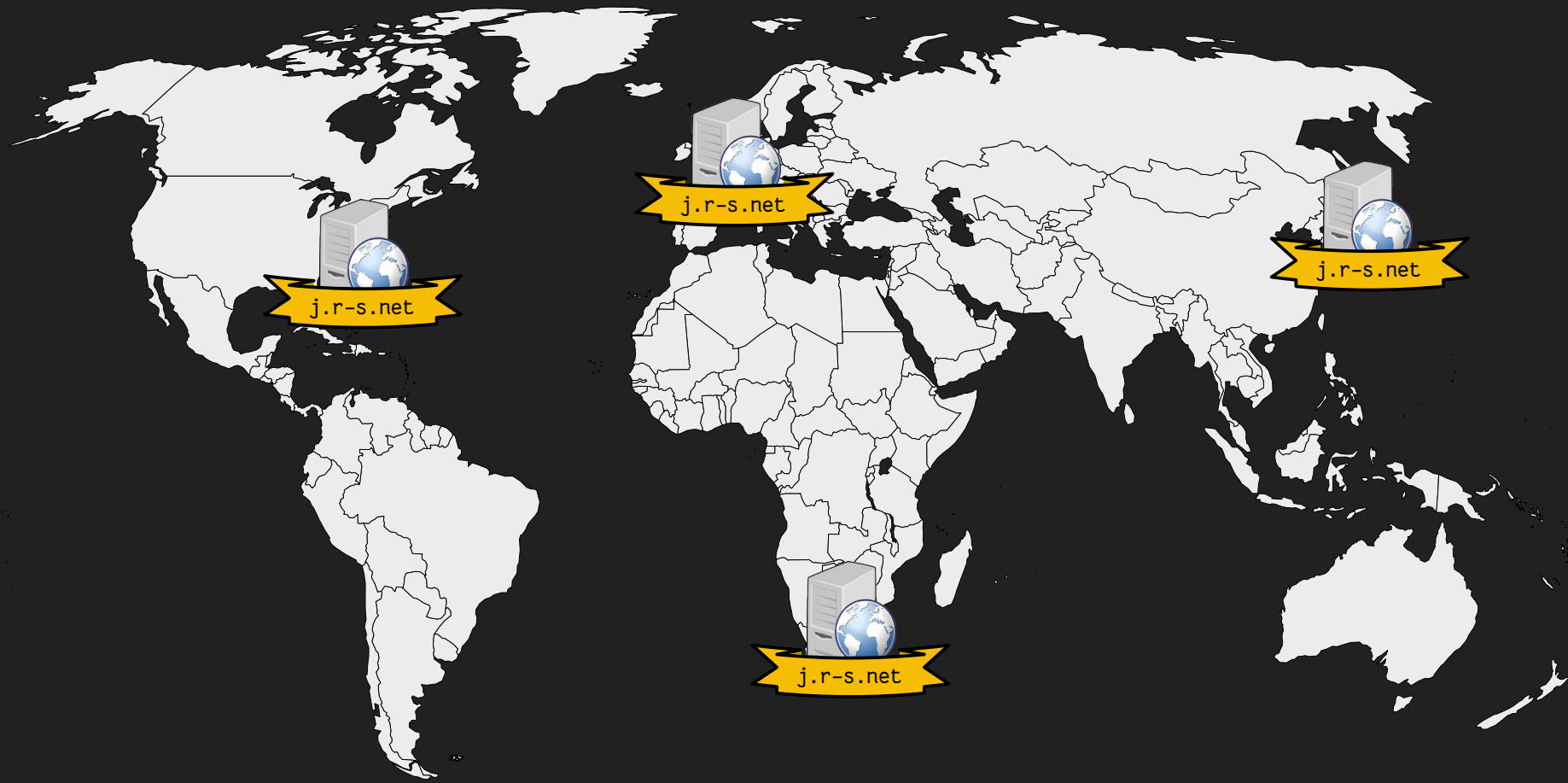
La charge du DNS



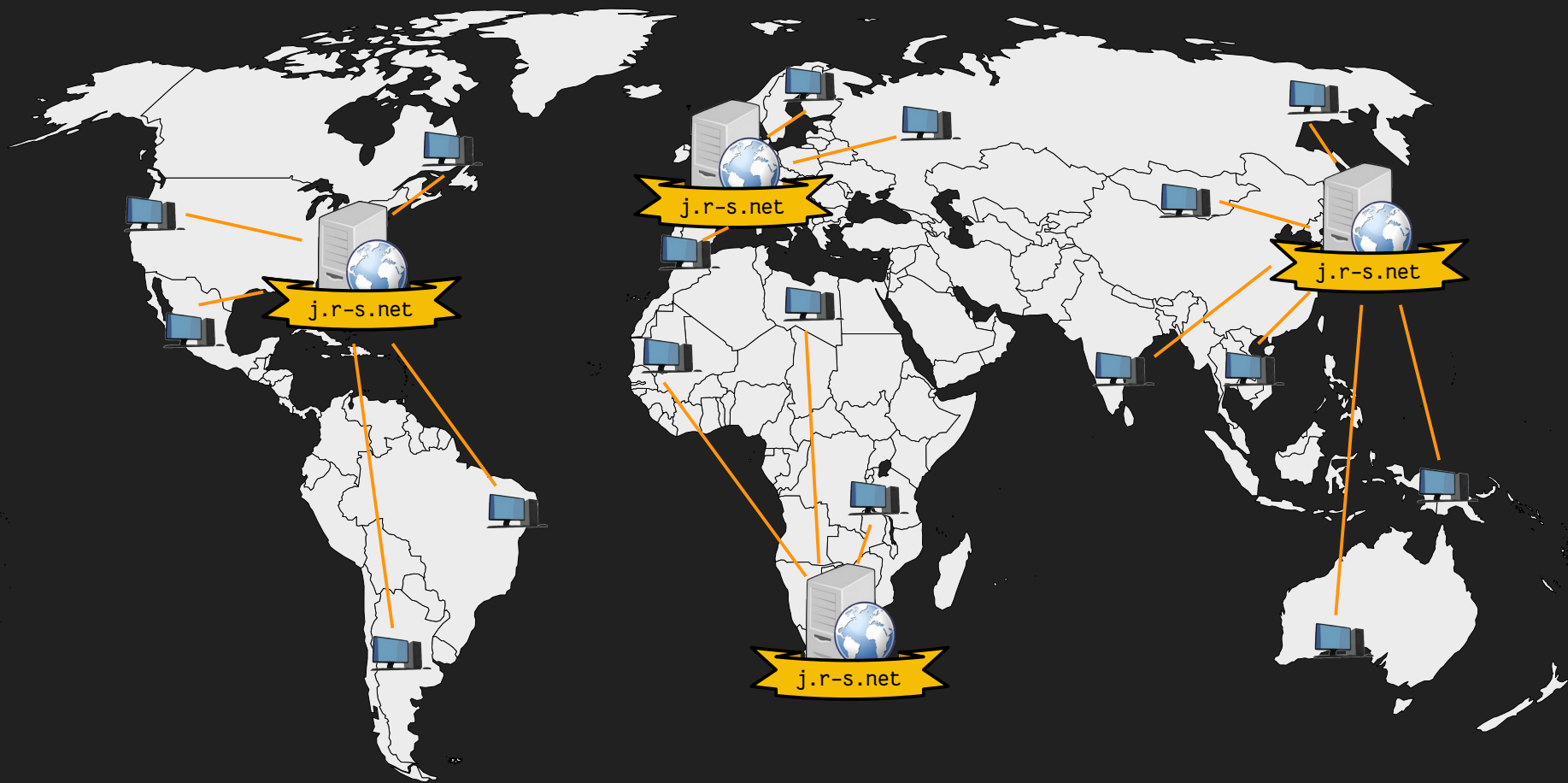
Anycast



Anycast



Anycast



Anycast



Lire les informations **administratives**

À vous !

```
42sh$ sudo apt install whois  
42sh$ sudo yum install whois  
42sh$ sudo pacman -S whois
```

```
42sh$ whois starinux.org
```

```
42sh$ whois x.com
```

DiG 9.10
Global options: +cmd
not answer:
→HEADER← opcode: QUERY, status:
Flags: qr rd ra ad; QUERY: 1, ANSWER: 2, AUTH:
OPT PSEUDOSECTION:
EDNS: version: 0, flags: do: 4096
QUESTION SECTION:
;; nemunai.re.
;; ANSWER SECTION:
nemunai.re. 345600 IN SOA nout.ra.nemunai.
nemunai.re. 345600 IN RRSIG SOA 10 2 345
87IMYoe4GS/h0kG1NamQ2vevNKxg/LLvao8rfXwfyiR5Zc6tDnI
/5P8iZh0gWBPqISEJLUClwsEAac1CGF6hX6gobyCGXS
vrrsh8L86Y+awsdcqpEK18YwFHexqk/GggiL
NNohM4P000vP1euNfYcxLMqQTi
TBMZV1WE1X4+QK
FHexqk/G14

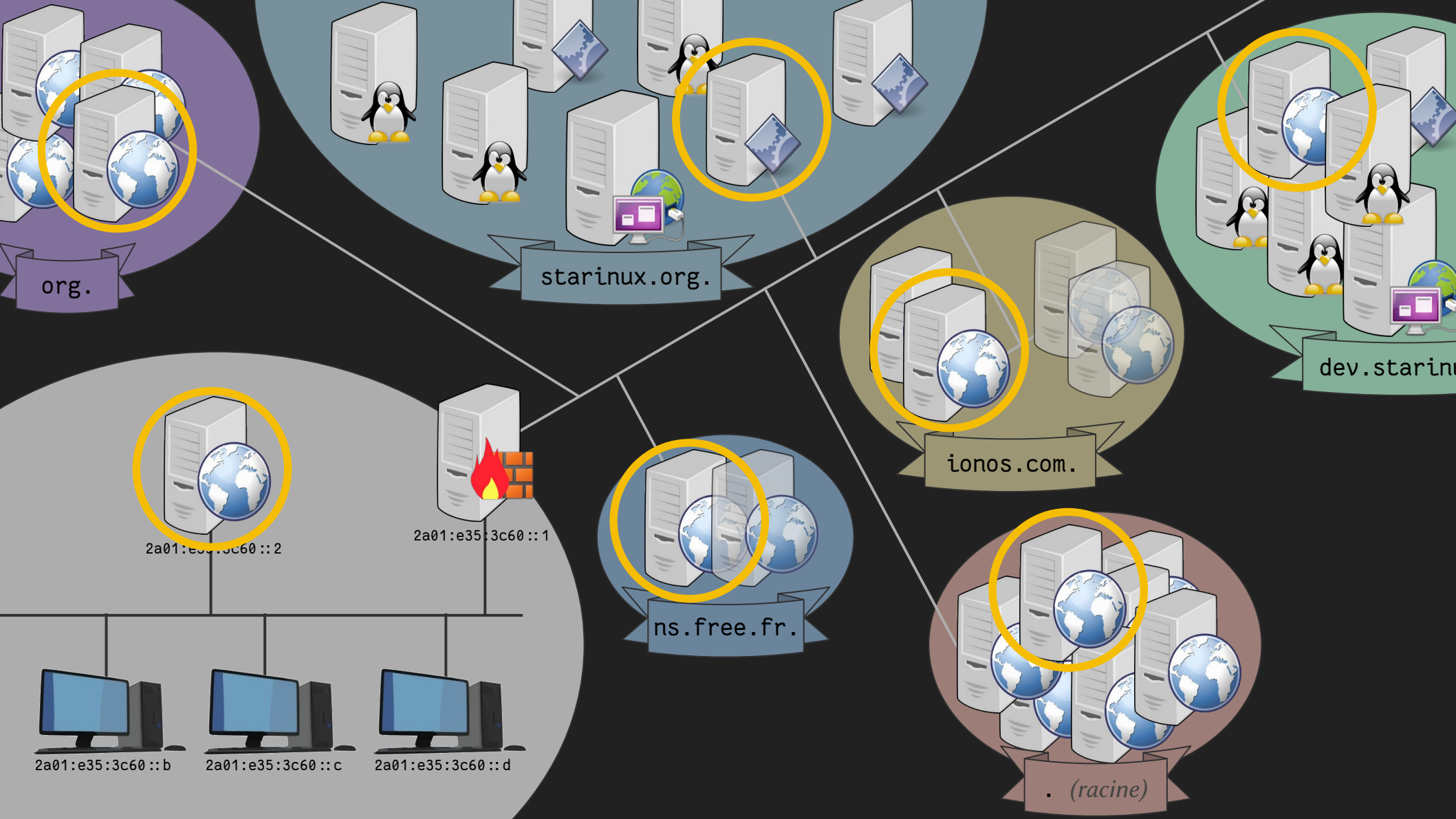


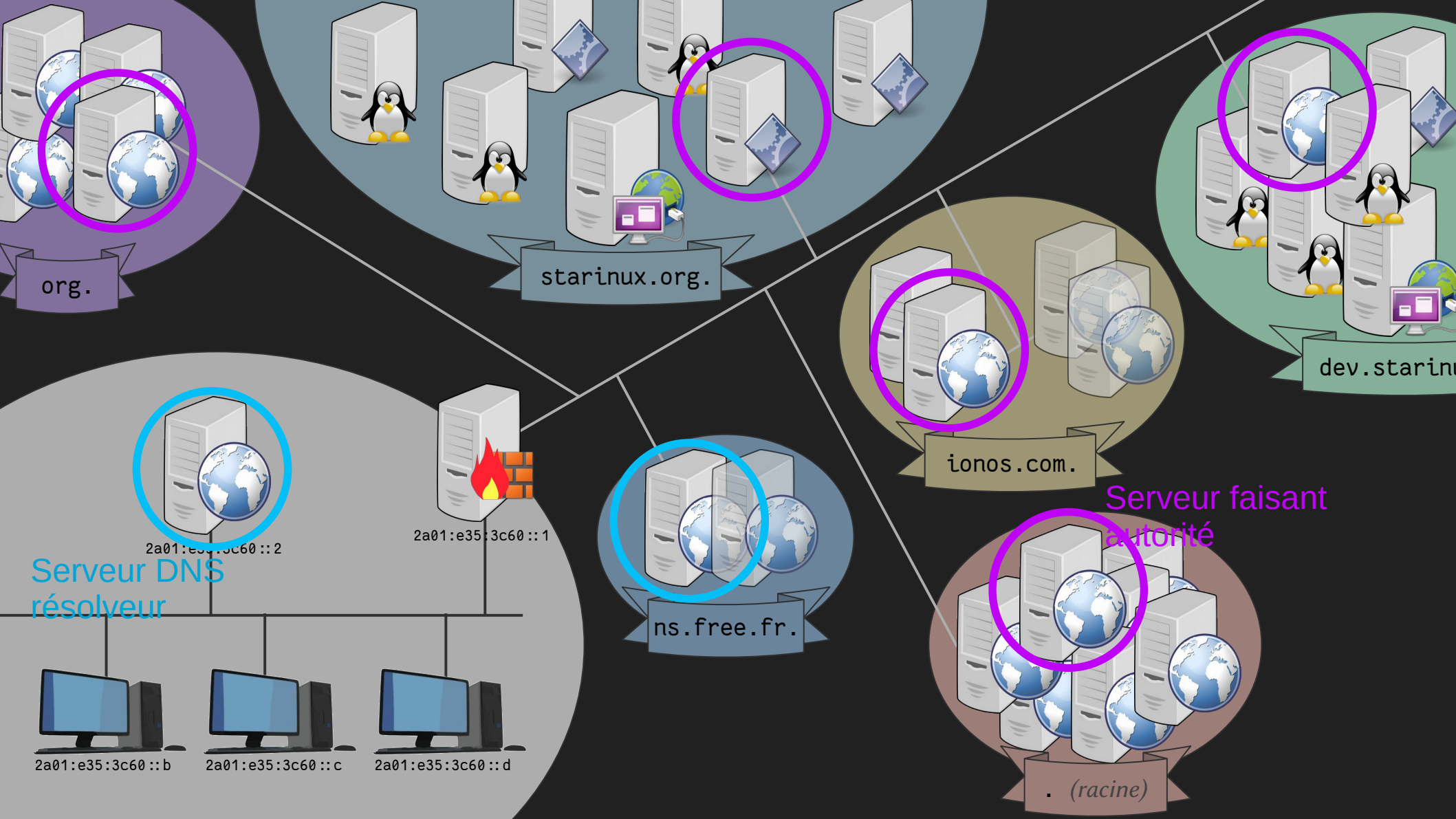
- Quel est le prix d'un domaine ?
- Mon bureau d'enregistrement me propose de payer une fonctionnalité que je ne comprends pas
- Que se passe-t-il lorsque l'on oublie de renouveler un domaine ?
- ...

FAQ domaines



Serveur DNS faisant autorité



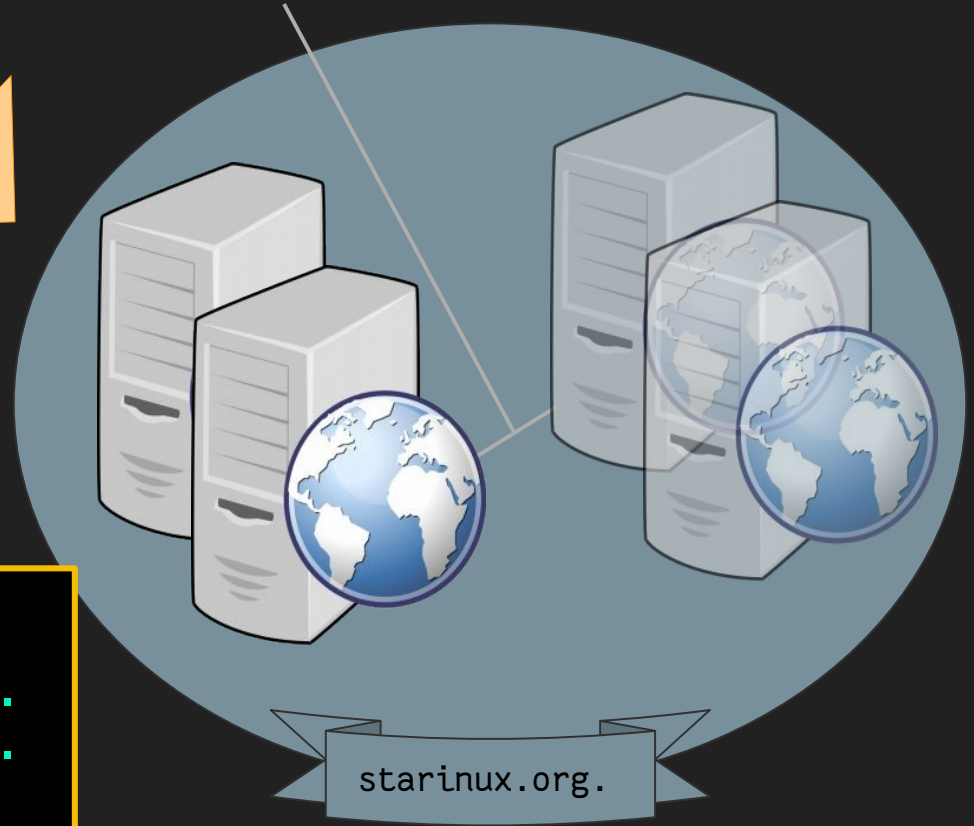




```
42sh$ dig starinux.org NS
```

```
;; ANSWER SECTION:
```

```
starinux.org.  NS    ns1031.ui-dns.biz.  
starinux.org.  NS    ns1031.ui-dns.com.  
starinux.org.  NS    ns1031.ui-dns.de.  
starinux.org.  NS    ns1031.ui-dns.org.
```



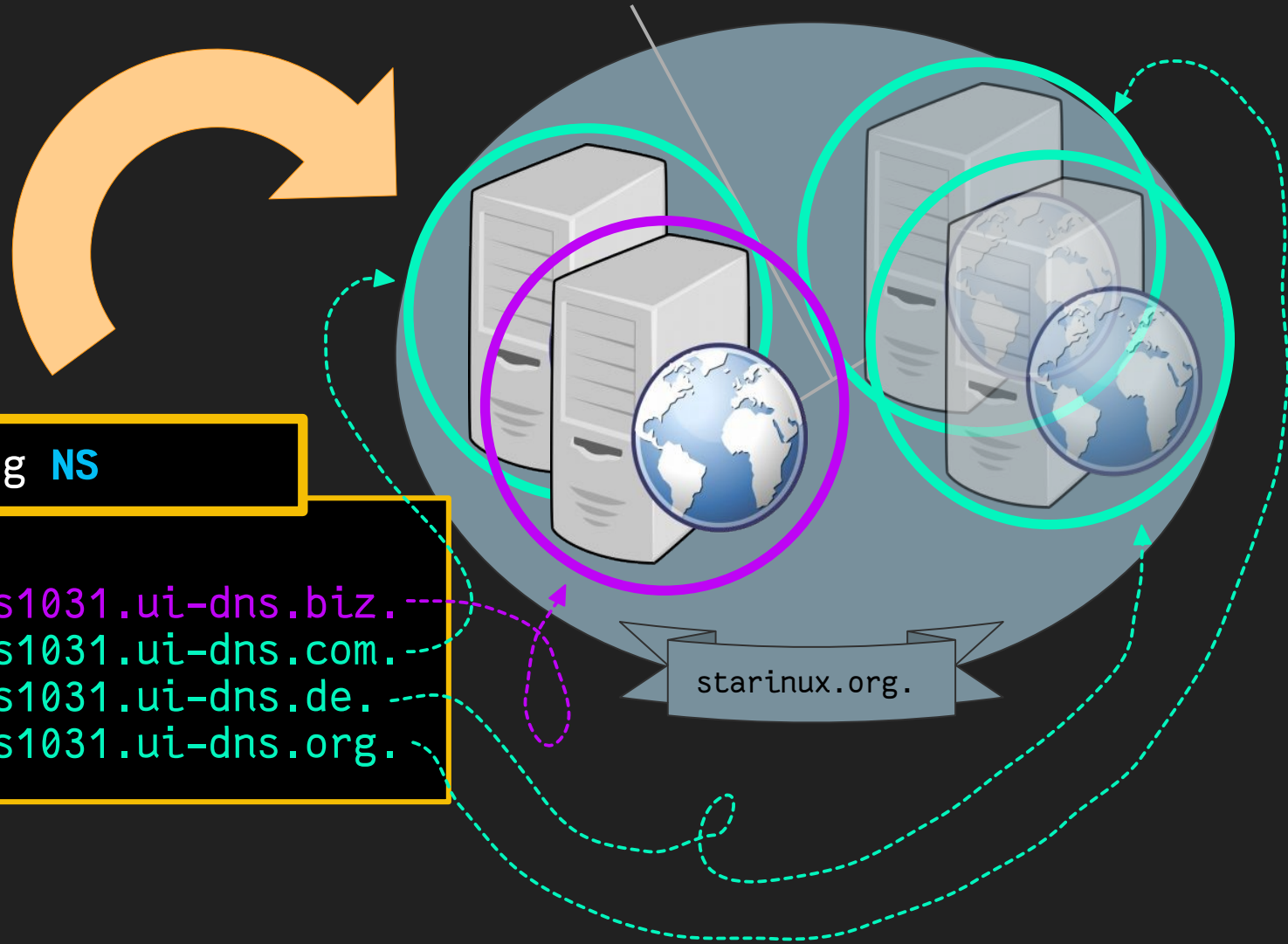
Serveur primaire

Serveurs
secondaires

```
42sh$ dig starinux.org NS
```

```
;; ANSWER SECTION:
```

```
starinux.org.  NS  ns1031.ui-dns.biz.  
starinux.org.  NS  ns1031.ui-dns.com.  
starinux.org.  NS  ns1031.ui-dns.de.  
starinux.org.  NS  ns1031.ui-dns.org.
```



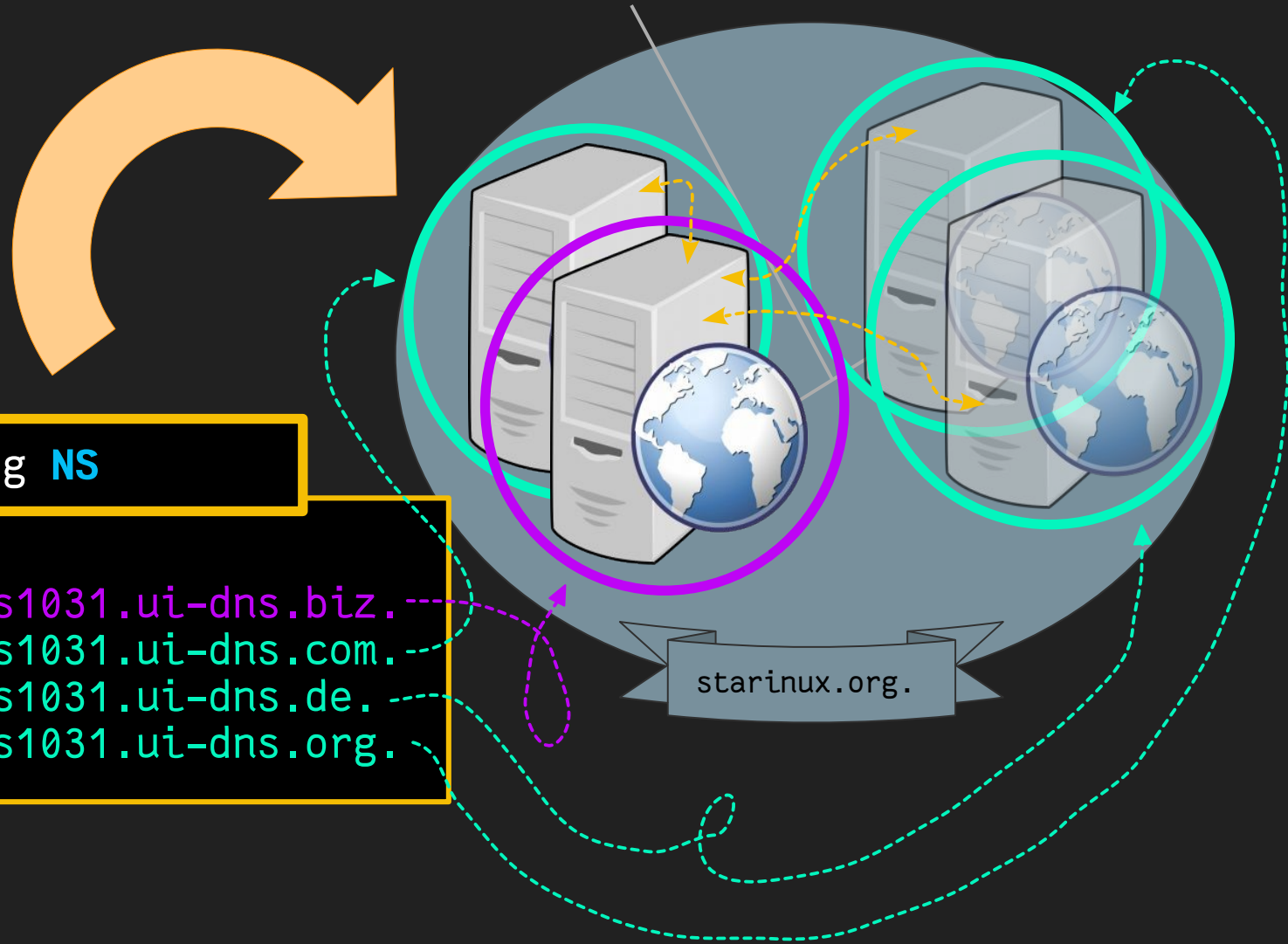
Serveur primaire

Serveurs
secondaires

```
42sh$ dig starinux.org NS
```

```
;; ANSWER SECTION:
```

```
starinux.org.  NS  ns1031.ui-dns.biz.  
starinux.org.  NS  ns1031.ui-dns.com.  
starinux.org.  NS  ns1031.ui-dns.de.  
starinux.org.  NS  ns1031.ui-dns.org.
```



```
42sh$ dig starinux.org AXFR
```

```
starinux.org.      86400   IN      SOA     ns1031.ui-dns.biz.
hostmaster.1and1.fr. 2013112660 28800 7200 604800 300
starinux.org.      3600    IN      TXT     "v=spf1 a ip4:213.36.253.166 mx
                                include:_spf.google.com ?all"
starinux.org.      3600    IN      TXT     "google-site-verification=
                                2cKYphrNpBJNuC3bKLB0bF2pOT4EfN5cR5odPMS7Mt4"
starinux.org.      172800  IN      NS     ns1031.ui-dns.biz.
starinux.org.      172800  IN      NS     ns1031.ui-dns.com.
starinux.org.      172800  IN      NS     ns1031.ui-dns.de.
starinux.org.      172800  IN      NS     ns1031.ui-dns.org.
starinux.org.      3600    IN      A       213.36.253.166
starinux.org.      3600    IN      MX     5 smtp.starinux.org.
starinux.org.      3600    IN      MX     1 mail.starinux.org.
mail.starinux.org. 3600    IN      A       213.36.253.166
mail.starinux.org. 3600    IN      MX     10 mx00.ionos.fr.
mail.starinux.org. 3600    IN      MX     10 mx01.ionos.fr.
smtp.starinux.org. 3600    IN      CNAME   starinux.org.
www.starinux.org.  3600    IN      A       213.36.253.166
www.starinux.org.  3600    IN      MX     10 mx00.ionos.fr.
```

À vous !

```
42sh$ dig @ns1.google.com AXFR google.com
```

```
42sh$ dig @nsztm1.digi.ninja AXFR zonetransfer.me
```

```
42sh$ dig @?????????? AXFR starlinux.org
```

Le fichier de **zone DNS**

```
$TTL 3600
```

```
@      IN SOA      ns1.example.com. admin.example.com. (  
                2025060401      ; Serial  
                3600              ; Refresh  
                1800              ; Retry  
                10d               ; Expire  
                3h )              ; Negative Cache TTL
```

```
@      IN NS      ns1.example.com.  
      IN NS      ns2.example.com.  
      IN A       192.0.2.1
```

```
www    IN CNAME   @
```

Un fichier de zone ***RFC1035***

À vous !

```
42sh$ named-checkzone -o - test test.zone
```

```
42sh$ named-checkzone -o - example.com test.zone
```

Le numéro de série

DiG 9.10
Global options: +cmd
not answer:
→HEADER← opcode: QUERY, status:
Flags: qr rd ra ad; QUERY: 1, ANSWER: 2, AUTH:
OPT PSEUDOSECTION:
EDNS: version: 0, flags: do: 4096
QUESTION SECTION:
;; ANSWER SECTION:
nemunai.re. 345600 IN SOA nout.ra.nemunai.
nemunai.re. 345600 IN RRSIG SOA 10 2 345
87IMYoe4GS/h0kG1NamQ2vevNKxg/LLvao8rfXwfyiR5Zc6tDnI
/5P8iZh0gWBPqISEJLUClwsEAac1CGF6hX6gobyCGXS
vrrsh8L86Y+awsdcqpEK18YwFHexqk/GggiL
NNohM4P000vP1euNfYcxLMqQTi
TbmMzV1WE1X4+QK
FHexqk/G14



