

# CZ.NIC, .cz and DNSSEC

CZ.NIC

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25 Jul 2012 – Prague / ICANN, Tech Day

# Agenda



- A few words about company
- Czech domain
- Our software
- DNSSEC.cz

# About CZ.NIC

- Founded in 1998 by group of 16 ISPs
- Main focus – TLD .cz ... and ENUM +420
- Special interest association of legal entities
- Open membership - 103 members - growing
- Registry-Registrar model (46 registrars)
- ~50 people, strong R&D part
- Based in Prague and Brno (2<sup>nd</sup> largest Czech City)
- Not for profit

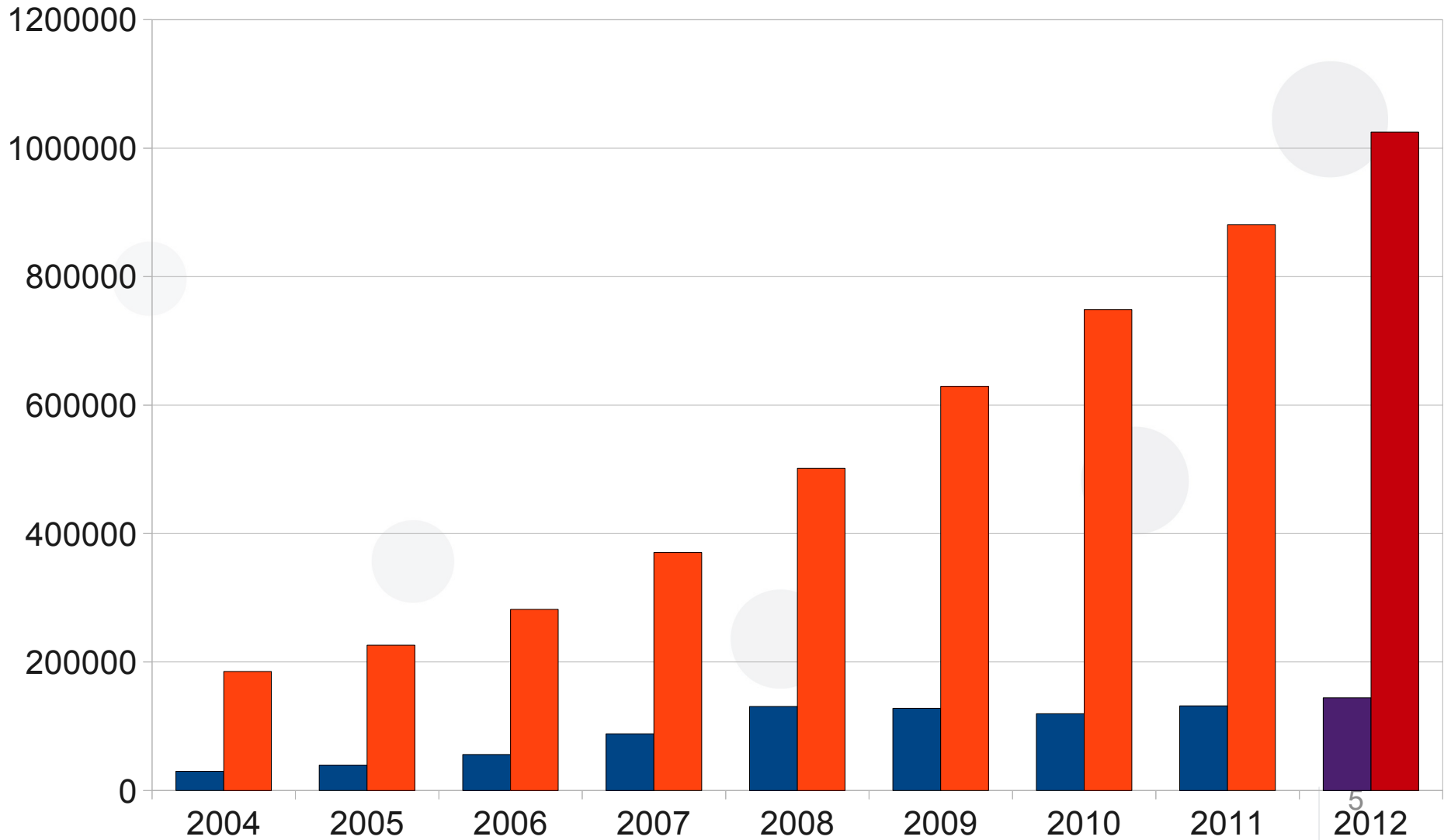
# Domain .CZ



- Fully liberalized, simple pricing model
- No restriction on numbers, presence etc.
- Strictly first come first serve
- ADR – Czech Arbitration Court (.eu, UDRP)
- DNSSEC, IPv6 – no fees
- End user domain locking
- 24x7 end user support, comfort notification
- Database cleaning
- No IDN



# Number of domains



# Internet

## Anycast DNS

a.ns.nic.cz  
Location: Chile, Santiago  
Czech Republic, Prague

b.ns.nic.cz  
Location: USA, Florida, Miami  
Sweden, Stockholm (NETNOD)

c.ns.nic.cz  
Location: UK, London (LINX)

d.nd.nic.cz  
Location: USA, California, RedWood City  
Germany, Frankfurt am Main (DE-CIX)  
Czech Republic, Prague

f.ns.nic.cz (unicast)  
Location: Austria, Vienna

## Casablanca

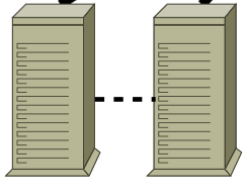
### DC GTS

Vinohradská 190  
Prague 3



Juniper M7i

Juniper EX4200



**FRED**  
+  
Anycast DNS  
a.ns, d.ns

1Gb UTP

NIX

1Gb UTP

## Interoute

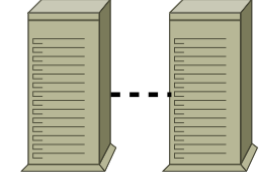
### DC SITEL

Nad Elektrárnou 411  
Prague 10



Cisco 7204VXR (NPE-G2)

Cisco 3750-24



**FRED**  
+  
Anycast DNS  
a.ns, d.ns

2x 1Gb fibre

1Gb fibre

100Mb UTP

100Mb UTP

Cisco 7204VXR (NPE-G2)



Cisco 2960G-8TTC



## OFFICE

Americká 23  
Prague 2



# DNS system - anycasting



# Other activities

- Registration system FRED
- Security
- Edification – books, conferences
- Training – CZ.NIC Academy
- Support of new technologies
- Support of Internet infrastructure
- Identify provider – mojeID (myID) - OpenID



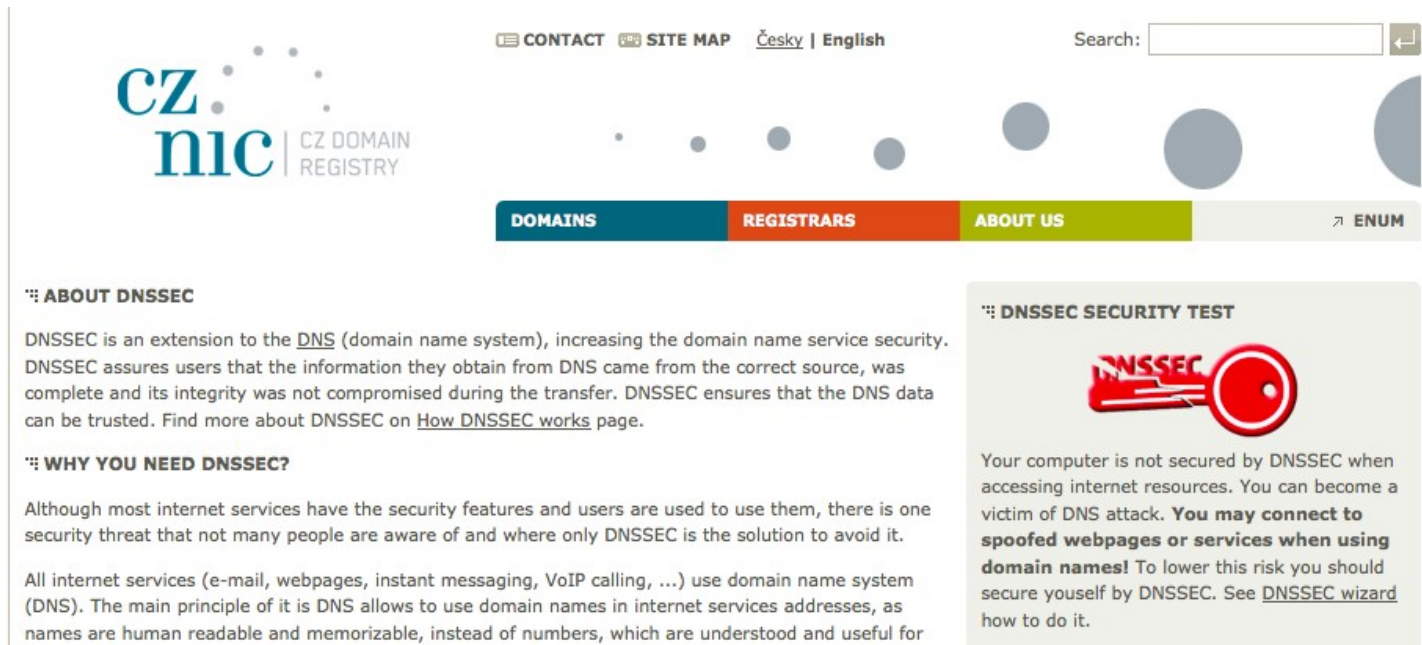


# Internet infrastructure

- Free NTP server
- Mirror of root server F
- Mirror of root server L – first node outside US, main distribution node for Europe
- Anycasting – change of RIPE policy
- Hosting of foreign secondary servers - .tz, .cl (mutual exchange)
- Mirrors of Linux distributions etc.

# Open validating resolvers

- Public DNSSEC validating resolvers
- Integrated into browser add-ons



The screenshot shows the CZ.nic website with the following elements:

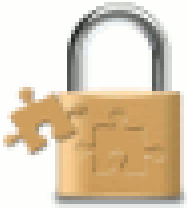
- Header:** "CONTACT", "SITE MAP", "Česky | English", and a search bar.
- Navigation:** "DOMAINS", "REGISTRARS", "ABOUT US", and "ENUM".
- Main Content:**
  - ABOUT DNSSEC:** "DNSSEC is an extension to the DNS (domain name system), increasing the domain name service security. DNSSEC assures users that the information they obtain from DNS came from the correct source, was complete and its integrity was not compromised during the transfer. DNSSEC ensures that the DNS data can be trusted. Find more about DNSSEC on How DNSSEC works page."
  - WHY YOU NEED DNSSEC?:** "Although most internet services have the security features and users are used to use them, there is one security threat that not many people are aware of and where only DNSSEC is the solution to avoid it. All internet services (e-mail, webpages, instant messaging, VoIP calling, ...) use domain name system (DNS). The main principle of it is DNS allows to use domain names in internet services addresses, as names are human readable and memorizable, instead of numbers, which are understood and useful for
- Right Sidebar:**
  - DNSSEC SECURITY TEST:** Includes a red "DNSSEC" logo and text: "Your computer is not secured by DNSSEC when accessing internet resources. You can become a victim of DNS attack. **You may connect to spoofed webpages or services when using domain names!** To lower this risk you should secure yourself by DNSSEC. See DNSSEC wizard how to do it."

- Using anycast technology
- <http://labs.nic.cz/odvr>

# Our software



- Main page – <http://labs.nic.cz>
- FRED – <http://fred.nic.cz>
- Knot DNS – <http://www.knot-dns.cz>
- BIRD – <http://bird.network.cz>
  - Routing daemon – similar functions to e.g. Quagga
  - RIP, OSPF, BGP, v4 & v6
  - Fast, efficient, light-weight
  - Most popular as route server in IXP world



# DNSSEC HARDWARE TESTER

- Test DNSSEC compatibility – device (and network)
- On-line database - EN/CZ/HU

## ZYXEL – LIST OF DEVICES

Device	Reports	Score	CZ.NIC score	DNSSEC compatibility	Last test
<a href="#">ZyXEL P-320W</a>	1	102	0	☁️ 52%	06-12-2009
<a href="#">ZyXEL P-660HW</a>	4	574	0	☀️ 72%	08-12-2009
<a href="#">ZyXEL P-660RU</a>	1	182	0	☀️ 92%	08-12-2009
<a href="#">ZyXEL P-660R-63</a>	1	182	0	☀️ 92%	02-01-2010
<a href="#">ZyXEL P-661HW</a>	0	0	0	–	–
<a href="#">ZyXEL USG 200</a>	0	0	0	–	–

- Windows / Linux / Mac OS supported
- Download at <http://www.dnssectester.cz>



# DNSSEC Validator

- Firefox/Chrome/IE add-ons - Shows icon similar to 'https'
- Validates domain name in the address bar
- No DNSSEC, broken DNSSEC, functional DNSSEC
- Download at: <http://labs.nic.cz>
- (Or search for DNSSEC at browser Add-ons)



# DNSSEC HTML Widget

- Informs about DNSSEC validation and IPv6 support of connection (on <http://www.nic.cz>)



- Measures speed of IPv4 and IPv6
- <http://labs.nic.cz/widget>

# Short history of DNSSEC.CZ

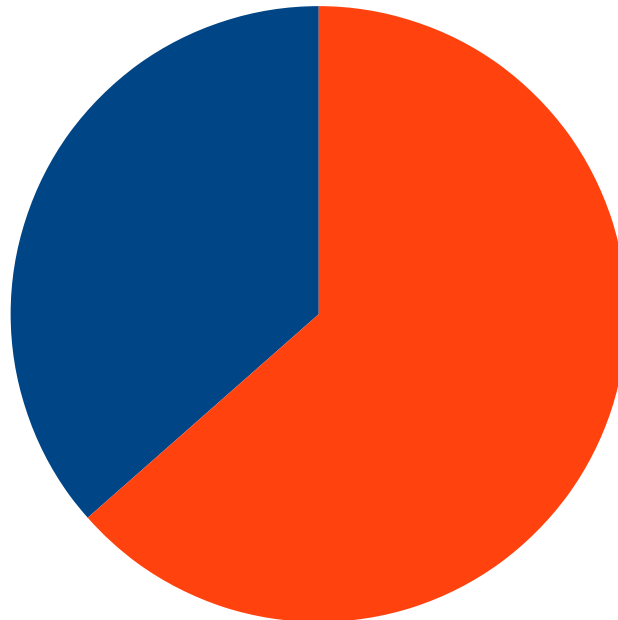
- April 4, 2008 - ENUM (0.2.4.e164.arpa) zone signed – first signed ENUM
- September 2, 2008 – .CZ signed (5th)
- September 30, 2008 - .CZ open for end-user public key registration (DS records)
- Started with NSEC – NSEC3 not deployed
- July 15, 2010 – root zone signed
- Key Rollover – (Aug 3 – Aug 24 2010) – 1<sup>st</sup> change of algorithm -> NSEC3



# DNSSEC penetration



- About 36,5% domains is signed
- That means ~ **348.000** domains! (of ~ 955.000)
- Check numbers at <http://www.nic.cz>





# Communication

- Registrars – seminars, training, financial incentives, direct, conferences, technical support
- Important web sites (government, news, e-shops) – direct, conferences
- ISPs – campaign (via end users) and direct
- End users – campaigns
- Tools

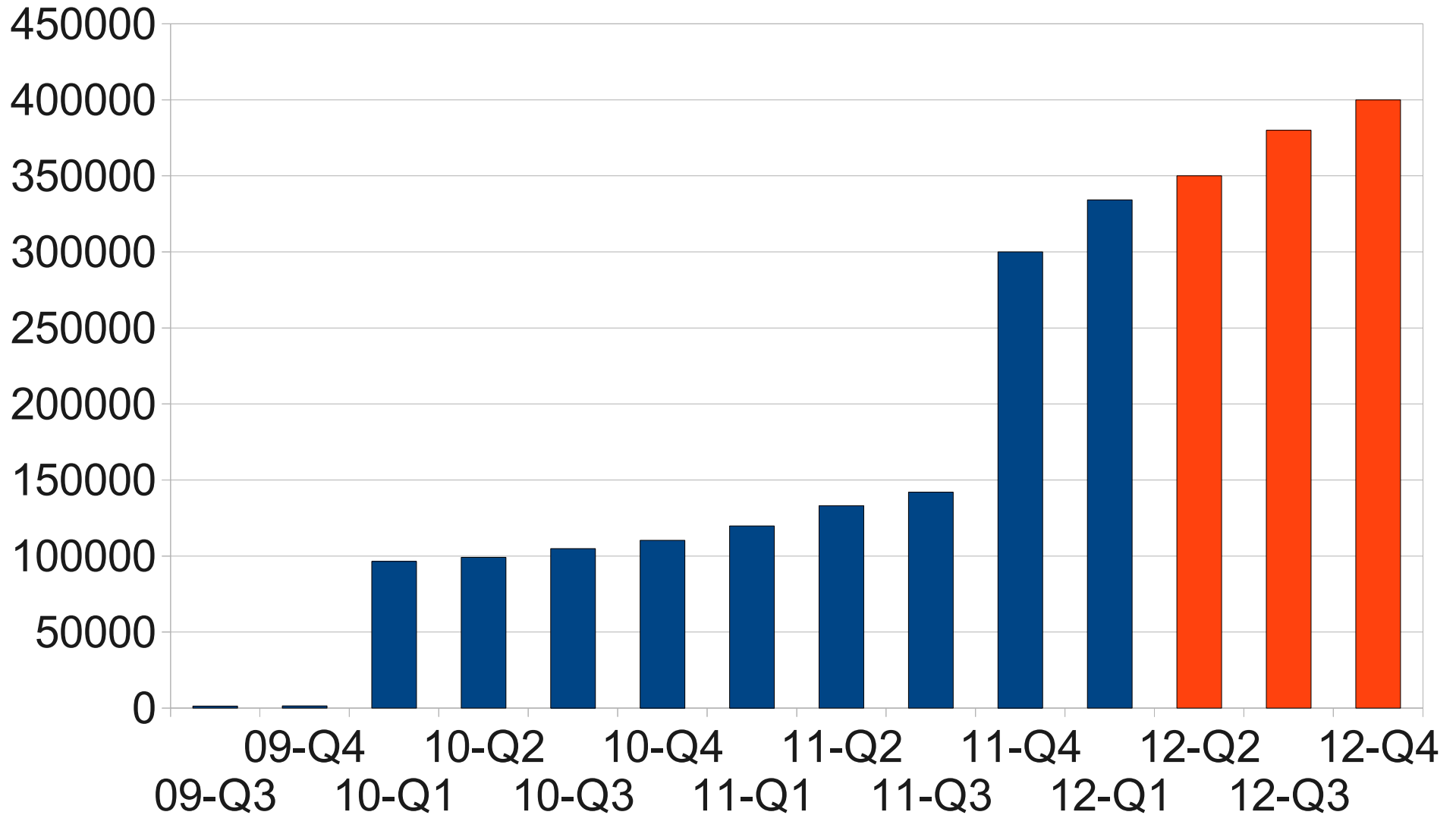


# Current situation



- 36,5% of all Czech domains – growing
- All major registrars (with 90% of market share) support DNSSEC – many of them by sign default – big thank to them!
- Many major ISPs validate (2 of 3 cell phone operators – Telefonica and Vodafone; majority of B2B; major xDSL provider
- Many important sites signed – news, magazines, e-shops, etc.

# Forecast (in Qs)



¿Questions?

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