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Name Collision in the DNS

Interisle Study Update

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Before Name Collision

- You (or your computer) use a local name to access a local resource.
  - maybe *printer.myname*
  - your local network knows where to find *printer.myname*
- That name looks like a DNS name (it has a dot!), but it's not.
  - ask the DNS about *printer.myname* and you will get "name does not exist"

After Name Collision

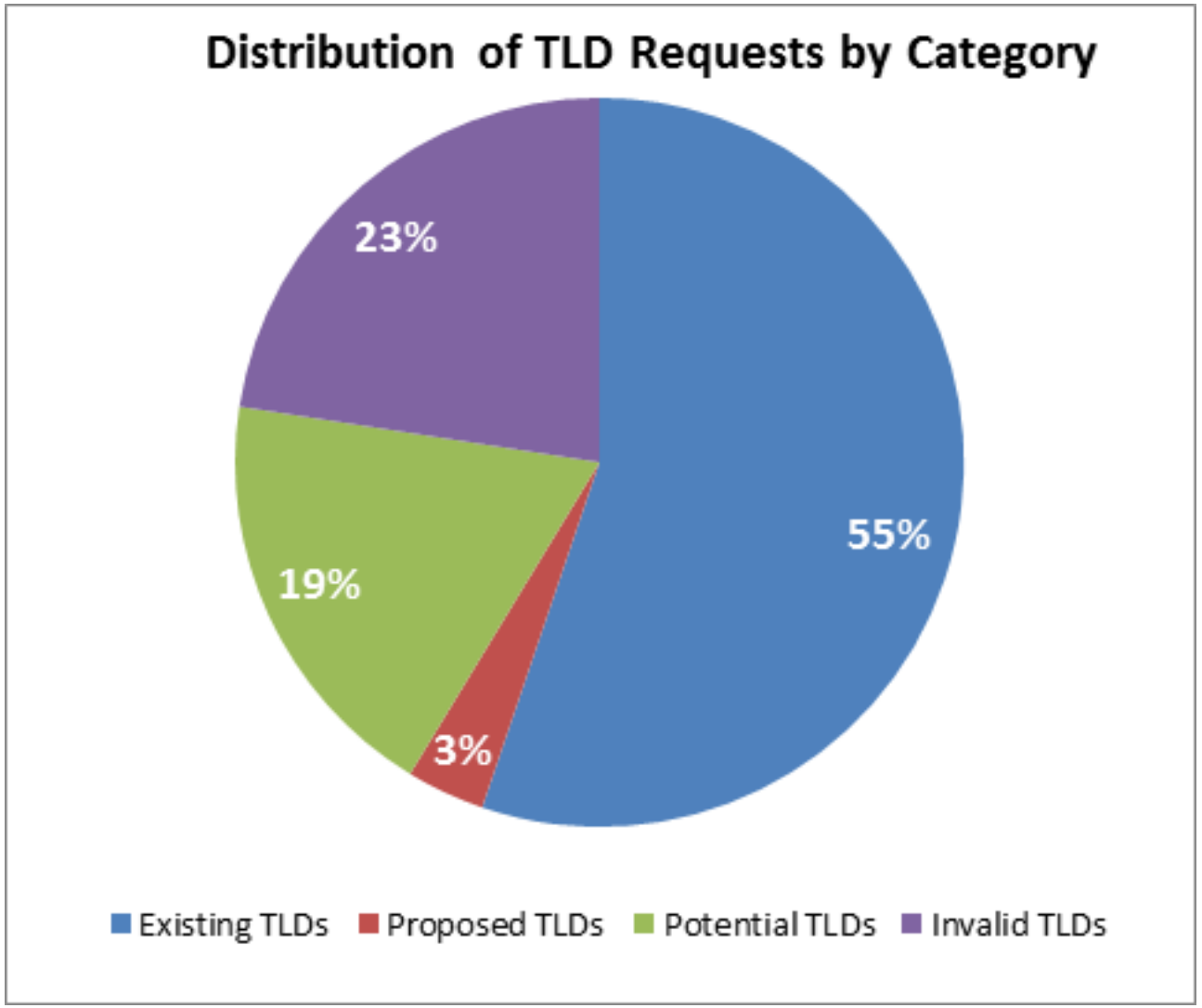
- ICANN delegates “myname” as a new gTLD.
  - and Herr Drucker registers the name “printer” in this new TLD
- Now *printer.myname* is a DNS name.
  - ask the DNS about *printer.myname* and you will get a pointer to Herr Drucker

Interisle Name Collision Study

- How likely is it that name collision with new gTLDs will occur?
- What effect might that have on the security and stability of the Internet?
- What options do we have for mitigating name collision risks?

Study Methodology

- "Day in the Life of the Internet" data
  - two samples (2012 and 2013) of queries to DNS root servers over a continuous 48-hour period
  - look for proposed TLD names
- Investigate potential consequences
  - name resolution ambiguity
  - X.509 public key certificates
- Identify mitigation options



A **Potential** TLD is a string that *could* be proposed as a TLD in the future (valid syntax), *e.g.* `pmch`

An **Invalid** TLD is a string that *could never* be a TLD (invalid syntax), *e.g.* `pm#ch`

Most-queried TLDs

Rank	TLD	Existing TLD	Proposed TLD	Potential TLD
1	com	8,555,901		
2	net	5,037,691		
3	local			2,501,363
4	org	1,099,693		
5	home		1,019,017	
6	arpa	846,020		
7	localdomain			596,094
8	internal			508,968
9	localhost			414,308
10	belkin			389,005
11	lan			362,934
12	domain			275,638
13	info	245,256		
14	edu	235,628		
15	corp		153,037	
16	router			140,180
17	dlink			126,466

Numbers are in thousands (x1000)

Most-queried Proposed TLDs

2013 Rank	2012 Rank	String	Count (thousands)
1	1	home	952,944
2	2	corp	144,507
3	21	ice	19,789
4	4	global	12,352
5	29	med	10,801
6	3	site	10,716
7	5	ads	10,563
8	12	network	8,711
9	7	group	8,580
10	9	cisco	8,284
11	8	box	7,694
12	14	prod	7,004
13	6	iinet	5,427
14	10	hsbc	5,249
15	11	inc	5,208

Potential Consequences

- Local name space resolution changes
- Search list processing changes
- Packets and streams (mail, VoIP, web,…) are misdirected
- Public key certificates using internal names become unreliable (SAC 057)
- Web browser cookie data are exposed

Mitigation Options

- Just say no
  - permanently reserve a specific string
- Further study
  - delay delegation until ??
- Wait until everyone's gone
  - delay delegation until colliding use stops
- Look before you leap
  - trial run before delegation

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Thank you

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