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RIPE NETWORK COORDINATION CENTRE

# RIPE NCC DNS Services

Johan ter Beest

# RIPE NCC Services



training meetings networking  
coordination **DNS** transfers  
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ASN RIPE Labs IPv6 research  
mergers IPv4 share presentations  
experience RIPE Stat RIPE Atlas  
Information anchors probes  
mailing lists

# RIPE NCC and DNS



- Reverse DNS
- Secondary DNS service for ccTLDs
- Operator of [k.root-servers.net](https://k.root-servers.net)
- (one of AS112 operators)



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# Reverse DNS

# Reverse DNS



- Directly linked to our registry function
- RIPE NCC is authoritative for all address ranges in the RIPE Registry, including legacy space
  - in-addr.arpa
  - ip6.arpa
- Authority delegated to the address holder
  - Controlled via RIPE Database

# How Does it Work?



- Every IPv4 and IPv6 address can have a DNS PTR record associated with it
  - This is used in a variety of security applications
  - Often logs show this name rather than the IP address
- Example:
  - 193.0.6.139 -> 139.6.0.193.in-addr.arpa PTR [www.ripe.net](http://www.ripe.net)
  - 2001:67c:2e8:22::c100:68b -> 2001:067c:02e8:0022:0000:0000:c100:068b
  - b.8.6.0.0.0.1.c.0.0.0.0.0.0.0.2.2.0.0.8.e.2.0.c.7.6.0.1.0.0.2.ip6.arpa PTR [www.ripe.net](http://www.ripe.net)



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# Secondary DNS



# ccTLD Secondary Service



- **Second level of DNS is just as important as the root**
  - Root servers only point to ccTLD and gTLD servers
  - Without a second level DNS server it would still break
- **Each TLD operator runs its own set of servers**
  - Similar to root servers these often use anycast
  - Secondaries sometimes “swapped” or outsourced
- **RIPE NCC provides secondary DNS for 77 ccTLDs**
  - For the benefit of the Internet
  - Stable operation from multiple locations



# ccTLD Secondary Service



- **.LB is operated by:**
  - American University of Beirut Computing and Networking Services Primary zeina.aub.edu.lb
- **Secondary services are provided by:**
  - rip.psg.com (IPv6 Enabled)
  - ns1.dns.aq
  - fork.sth.dnsnode.net (IPv6 enabled)
- **DNSMON ([dnsmon.ripe.net](https://dnsmon.ripe.net)) monitors many TLDs,**
  - .LB is not one of them at the moment, as a policy, the operator has to authorise us to start monitoring their service



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# K-root Operations

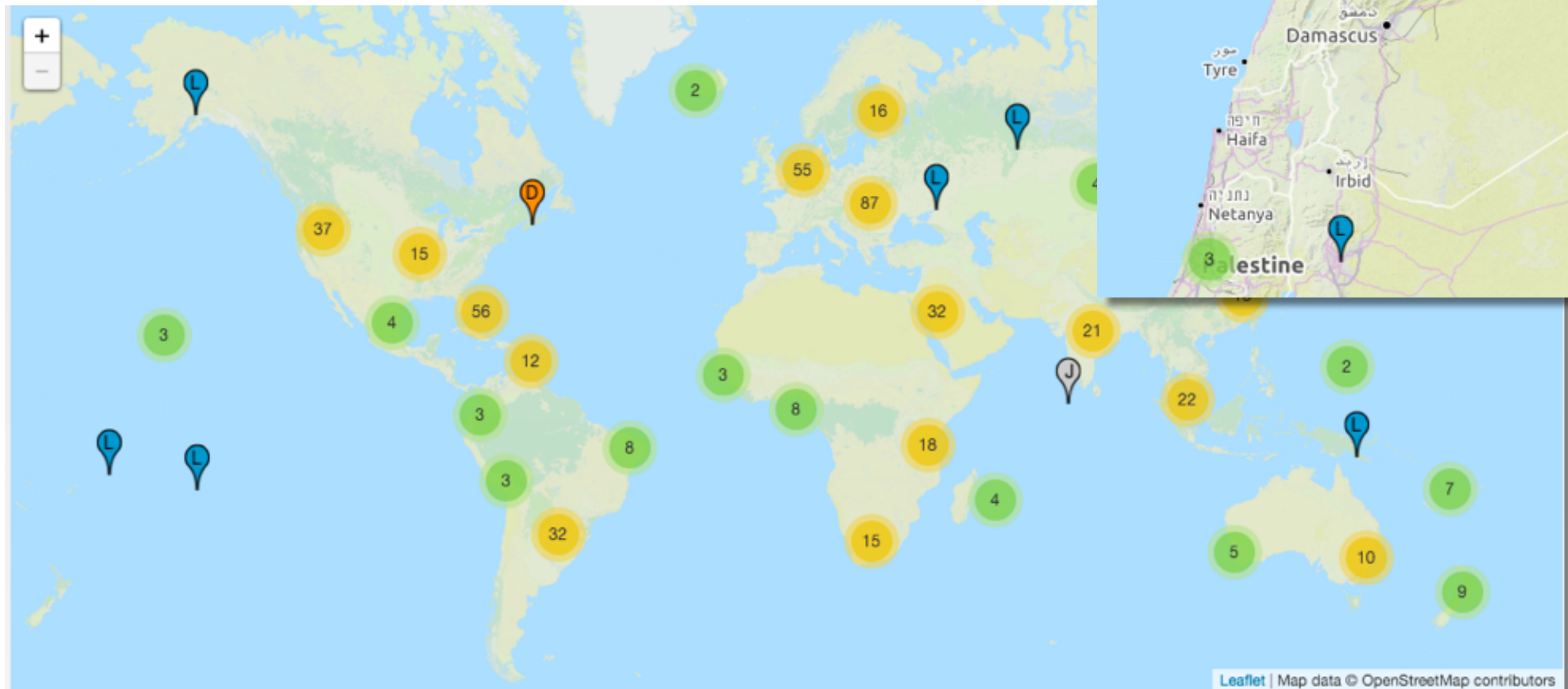
# Root Servers



- There are 13 DNS Root servers with 12 operators
  - Each root server runs multiple instances, using anycast
  - Spread all across the world

A	Verisign - 5 sites	H	US Army - 2 sites
B	ISI - 1 site	I	Netnod - 41 sites
C	Cogent - 8 sites	J	Verisign - 74 sites
D	UMD - 59 sites	K	<b>RIPE NCC - 33 sites</b>
E	NASA - 12 sites	L	ICANN - 153 sites
F	ISC - 57 sites	M	WIDE - 7 sites
G	US DOD - 6 sites		

# Root Servers Globally



source: <http://www.root-servers.org>

# K-root



- Hosted nodes based on single-box solution
- Easy to set up, peering with one organisation
  - Host is free to decide on anycast announcing policies
- Full automation
  - Nodes will be taken out of the anycast network automatically if something is wrong, only three out of five core nodes are needed to handle peak K-root traffic
  - Almost all technical set-up and monitoring systems are automatically added on our side
- No expensive resource requirements for hosts

# Hosting K-root



- We consider every request
  - Technical requirements published on [k.root-servers.org](http://k.root-servers.org)
- We are particularly interested in:
  - Hosts that can improve K-root access globally, based on our measurements
  - Hosts in the RIPE NCC service region



# Questions

[jterbeest@ripe.net](mailto:jterbeest@ripe.net)

