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DUBLIN – Joint Meeting of the ICANN Board & the RSSAC  
Wednesday, October 21, 2015 – 10:00 to 11:00 IST  
ICANN54 | Dublin, Ireland

STEVE CROCKER: We'll start in just a minute.

Well, speaking for the board, we're mostly here. A couple of people are busy doing other things. Fadi will be along in a bit. He's tied up in another meeting, which is normal for him.

Welcome, everybody. Just speaking for myself, this is certainly one of the groups that I enjoy interacting with most. Once in a while we actually get to say something that has technical content, which is a relief.

This is really your meeting, but I want to take a second to introduce particularly our new board members, Lousewies, Lito, and Ron.

And Liman says we're going to go around and introduce the RSSAC members. Usually it's to put names together with faces, but I think in this case, it's to put faces together with letters, and so with that, I turn things over to you.

LARS-JOHAN LIMAN: Thank you, Steve.

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*Note: The following is the output resulting from transcribing an audio file into a word/text document. Although the transcription is largely accurate, in some cases may be incomplete or inaccurate due to inaudible passages and grammatical corrections. It is posted as an aid to the original audio file, but should not be treated as an authoritative record.*

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So I will -- my name is Lars-Johan Liman. I work for a company call Netnod, and we operate one of the root servers. In my case, it's I. But I'm also one of the two co-chairs of the Root-Server System Advisory Committee.

My second co-chair, Tripti Sinha, is unfortunately forced to leave. She sends her deepest regrets that she couldn't be here but she's on her way back to the U.S. as we speak here.

I would actually just like to start with introducing the RSSAC members who are here by walking around the table to figure out where they sit.

Actually, starting to my left.

SUZANNE WOOLF: Suzanne Woolf, and I'm here as the RSSAC liaison to the ICANN board.

LARS-JOHAN LIMAN: Again, Lars-Johan Liman, I root, and then I will continue over to -  
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WES HARDAKER: Wes Hardaker, B root.

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DANIEL MIGAULT: Daniel Migault, liaison with IAB.

JIM MARTIN: Jim Martin, ISC, F root.

KAVEH RANJBAR: Kaveh Ranjbar, RIPE NCC, K root.

ASHLEY HEINEMAN: Ashley Heineman, NTIA, representing the root zone administrator liaison role.

BRUCE TONKIN: Bruce Tonkin, ICANN board.

TERRY MANDERSON: Terry Manderson, L-Root.

DUANE WESSELS: Duane Wessels from VeriSign, representing the root zone maintainer liaison.

BRAD VERD: Brad Verd with VeriSign representing A and J root.

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JOHN CRAIN: John Crain with ICANN representing L Root.

ASHWIN RANGAN: Ashwin Rangan, ICANN.

JONNE SOININEN: Jonne Soininen, the IETF liaison to the ICANN board.

JOHN BOND: John, L Root.

WARREN KUMARI: Warren Kumari, just looking for a warm place to sit.

GEORGE SADOWSKY: George Sadowsky, ICANN board, just sentenced to three more years.

RINALIA ABDUL RAHIM: Rinalia Abdul Rahim, ICANN board, and I think I need my own root.

[ Laughter ]

SUZANNE WOOLF: You and everyone else.

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LITO IBARRA: Lito Ibarra, incoming board member.

MARKUS KUMMER: Markus Kummer, ICANN board.

WOLFGANG KLEINWACHTER: Wolfgang Kleinwachter, ICANN board.

BRUNO LANVIN: Bruno Lanvin, ICANN board.

KUO-WEI WU: Kuo-Wei Wu, ICANN board.

RAY PLZAK: Ray Plzak, free at last, George.

[ Laughter ]

CHERINE CHALABY: Cherine Chalaby, ICANN board.

LOUSEWIES VAN DER LAAN: Lousewies Van der Laan, incoming board member.

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ASHA HEMRAJANI: Asha Hemrajani, ICANN board.

RON DA SILVA: Ron da Silva, incoming board.

CHRIS DISSPAIN: Chris Disspain, ICANN board.

STEVE CROCKER: Steve Crocker, ICANN board.

LARS-JOHAN LIMAN: So --

SUZANNE WOOLF: Yeah. If you wouldn't mind. No, I just wanted to sort of set the stage just for a minute.

What we have here for an agenda is actually pretty brief and informal. There are a couple of things that RSSAC really wanted to make sure the board was informed about, but it's primarily an opportunity to ask questions and sort of take informal input, so please.

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LARS-JOHAN LIMAN: Yes. We've received a few questions, the ones that you see up there, and prepared a bit of a status update on those.

That said, that's very brief and we really welcome more questions.

RSSAC, as you know, is comprised of the 12 organizations -- or representatives from the 12 organizations that operate root servers and we have liaisons, as you've seen here, to the Internet Architecture Board, to the NTIA, to VeriSign, and also to the board, of course, and the NomCom.

We also have -- the lion's part of the work that's produced within RSSAC is produced by the RSSAC caucus, which is a group -- a pool of subject matter experts that we engage with and where we rely on the experience and knowledge of all those people.

There are up in the numbers of, what, 50, I think, where the formal committee is only 12 members and we don't have the experience and knowledge to do all the investigations and creating documents that we foresee need for in the future, so we've created this wider body.

Updating from -- from last time when we met, which was I believe two meetings ago, I would first like to introduce the most recent document that we've issued, which is number 3 in the RSSAC series, which is a report on the root zone TTLs.

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Now, every DNS record in the DNS system has a property called "time to live," which tells the receiving end, the client side, the caching resolver, how long it can keep the record and reuse it without having to query again.

And those -- the value of the time to live is a property that affects how the system behaves. The shorter the time to live, the more often the caching resolver on the client side will have to come back and ask the authoritative server for the same information again.

On the other hand, if changes happen to the information on the authoritative side, it will propagate slower if the TTL is long because the cache will hang onto the old information because the time to live said it could.

And there's also a -- possibly a discrepancy between the various levels in the DNS tree between the root, the top-level domain, the second-level domain. At every step in the ladder, there could be a discrepancy with the time to lives. And we realized that the time to lives that we use in the root zone were designed very long ago. They've been -- they've changed slowly over time, but there hasn't been a proper investigation regarding what proper values should be. At least not in a long time.

And they also tie loosely into secure DNS because secure DNS has another set of timers which is when you generate the



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signatures that you use to validate the information in DNSSEC, the signature has a lifetime, which is another timestamp, and that has to kind of tie in and work with the TTL in a good way, and we saw that there was possibly cause for concern there, so we launched the investigation.

And that was done in a very good way. It was led by Duane up there in the checkered shirt, and I was actually much impressed with the work that they undertook.

There was lots of research done on big piles of statistical information we have from the root servers and other servers within the DNS OAR, the operations analysis and research center, which is a stand-alone body for DNS -- for people and organizations that deal with DNS operations in general, not only roots. And by probing their data banks, we could get a lot of information about that.

So the group was tasked to consider whether the root zone time to lives -- time to live stamps in the root zone are appropriate for today's Internet environment and also to check if we were to change the time to live or make a recommendation to change the time to live, how would that affect DNS usage and DNS traffic in general, and also whether the previous recommendation we did, which was to extend the signature

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validity lifetime, was sufficient to address the problems that we could foresee.

We didn't -- we didn't -- we are not aware that there actually are actual problems out there with the timing, but we could see -- you could construct a degenerate case that if this happens and that happens and that happens and that happens and that happens, then we might have a problem, and it was also part of the investigation to see whether the change we requested and which was performed actually mitigated that problem.

So the outcome of this study was that the root zone delay TTLs are still appropriate for today's environment. However, they can be reduced. The time to lives can be shortened down to one day. I believe they are two days today, is that correct?

Yeah. Duane is nodding.

So you could bring them down to half without any significant impact on the amount of traffic. And if you want to increase the time to live instead, you should really start to watch the DNSSEC timers because that's -- that's when they start to kind of drift apart. Right now, everything is covering everything in a good way, but if you -- if you want to extend the time to live to be longer, then things start to be torn apart. That is, though, a rather theoretical problem. We haven't seen that in the wild at all, so again, it's a construed example.

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And in fact, it seems that the time to live in the root zone appears to not matter all that much because the client side, the caching resolvers, don't really follow the time to live instructions.

The time to live travels with the DNS information and it's a bit of an instruction to the receiver that you may keep this for this amount of time, but it's not -- you cannot enforce it.

So the client can choose to use a different time. It's a guarantee value. It's like "best before" on the milk. You cannot force the people to drink the milk before that date and you cannot force them to keep it longer.

But turns out that the software out there that is using and talking to the root servers don't really follow the TTL values that close, so extending it doesn't really make much sense either.

So bottom line, there are really no reasons to consider changes to the root zone TTL. It's actually working well.

However, there are a couple of recommendations that come out of this document, and one is to recommend to the root zone management partners -- IANA, NTIA, VeriSign -- to work together to increase the signature validity period for DNSSEC. That is again to further alleviate the problem with the timers drifting apart. But this is not an urgent issue and that -- we can do this in

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a very planned and slow-paced testing, trying to -- we don't have any operational problems. We're just trying to avoid one that we can foresee if we really bend our minds to it.

And the second recommendation is simply to not change the time to live values in the root zone right now.

If we -- I should stop there to ask if there are any questions regarding this document or my presentation thereof.

Seeing none -- and we welcome questions afterwards as well -- ongoing work parties.

Another old issue of the root server system is actually the name of the root server hosts. They are named with a letter, as you know, and then in the -- in the sub-domain, rootservers.org -- sorry, rootservers.net.

That naming scheme, that way of naming the servers is by now more than 20 years old and it replaced an even older non-deterministic system where they just had ordinary host names.

But we've been looking at that and we wanted to figure out whether changing the name again could give us more benefits and we've launched a work party to look at that and they are currently working with that, and they were tasked to document the technical history of the names assigned to individual root servers since the creation of the root system, and that goes

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actually way back to the early 1980s and there have been changes to the systems during that time. The most recent one to the naming scheme was, as I said, in 1995, I believe.

And they were also asked to consider changes to the current naming scheme, and in particular whether changing -- moving the names of the individual servers from the root servers to the net zone, which is something that is two steps down in the DNS tree, move the names into the root zone, that could possibly give us benefits when we talk about DNSSEC and other things, but we wanted to explore what benefits we could have from this.

And that also includes looking at packet sizes and so on.

And of course doing this also involves performing a risk analysis of what -- what risks do we meet if we start to change the names of the servers, and at the end, make a recommendation whether to change the names or not, and if to change, to what.

We don't know. They are working, so this is -- this is an investigation into unknown territory to see what we can come up with.

Again, questions? No?

Because then we have only two small things that are upcoming -  
- well, actually three.

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We have a document sitting waiting for publication, which is going to be published in tandem with an RFC from IAB. These two documents will together form expectations -- two expectations documents: What to expect from root servers and root service, so what is a description of a service that is being provided so that everyone out there knows what to expect from root servers. This is what I should expect when I talk to one. There is the protocol side, which is being dealt with by the IAB; and there is the operational side which is dealt with by RSSAC.

Now, once these expectations documents are out there, we thought it might be a good idea to create some kind of test bed where we can test that the root servers actually follow these and live up to these expectations. But such a test bed would need a requirements document and a description. So we're about -- we're contemplating launching a work party for that. It seems kind of premature to do that before the documents are published. So it's a bit in a holdback stage right now.

Apart from that, only two minor updates. We have our own internal procedures document which we created two, three years ago as we restructured RSSAC. And we have now tried to live by our own procedures. And we see that, okay, the first cut wasn't really perfect. So we need to adapt some procedures and especially find ways to engage with the caucus in better ways than we do now because they're very important to us. But we

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feel that we don't have the open and warm communication that we would like to have.

And the technical specification in RSSAC 002 where we specify measurements for the root servers, that they should -- how they should measure their systems so we can compare the numbers from different operators. It actually has a small technical error in it, which we need to fix in a errata-like style. That's also ongoing. So that's that for documents.

I will pause here again for comments or questions.

STEVE CROCKER: So this is going to be a name rollover.

[ Laughter ]

LARS-JOHAN LIMAN: That's a way of putting it, yes.

STEVE CROCKER: I deliberately chose that, not just for the humor but in any rollover, the question is, you start it and then you have an overlap period, and then you have to choose when to withdraw the old names. What's your criteria and what evidence will you have that the access to the old names is no longer needed?

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LARS-JOHAN LIMAN: Don't know yet. This is an ongoing work party. That is definitely something to take into account. But first we need to figure out whether to do it at all or not.

SUZANNE WOOLF: Yeah, if I could just add a little bit to that because part of the -- part of the way things work with the caucus is that there will be a shepherd for each of these projects to bring it through the process. And I'm shepherding this one.

The question actually came from why isn't the rootservers.net zone signed? Gee, isn't that a security problem? Why aren't you doing this? And the conversation that comes from that said, wait a minute, we need to examine the assumptions here because it's not clear that it would be more -- that there would be a security benefit from signing it. And that leads to the next set of questions about, well, why do we do it this way? And there's a historic set of reasons that several people in the room are very familiar with, why the naming scheme we currently have is used now. But what this project is doing, what this paper is doing, is looking at is there a reason to change? What would the options be? And what would be reasons to change or not?



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So I think -- I think -- and the other thing I was going to say is I really wanted to highlight that the outcome of the root TTL paper that Liman described, I like it a lot. One of the results was to say, This works just fine. Don't change it. There's no benefit to it. It is perfectly possible that this discussion will end will documenting the history of why things are the way they are and then saying, They are fine the way they are. We don't have to change anything. We don't know yet.

And I thought I saw Ray's hand.

LARS-JOHAN LIMAN: Please.

RAY PLZAK: Thanks, Liman.

One of the things that also has to be considered is if you go about changing the names of the root servers is that the environment today is entirely different than it was in 1995 when we did it the last time.

And to tack on to Suzanne's last statement about not changing something, the fundamental rule is don't break the Internet.

LARS-JOHAN LIMAN: That rule is the rule that I have almost over my desk at home.

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[ Laughter ]

That is the first and foremost priority for us and as far as all the root zone operators, stability, state of stability, make sure it works. We don't have to be bleeding edge. We are the chassis under the machinery. We can't break.

That said, you are quite right. The network is something totally different right now. And to me, if this undergoing work party comes to the conclusion that something should be changed, then that warrants another -- I would say a larger and more important work party to figure out how the change should happen. But as Suzanne just mentioned, we are far from that point yet.

Wes?

WES HARDAKER:

There was a lot of very good engineering that happened in all of the past design. That includes both the TTLs as well as the naming scheme. It's not like thought metrics we don't think are invaluable. It's that there wasn't any documentation that came along with it. And I think one of the best things that's coming out of the caucus, both for the TTL work as well as the naming scheme work, is that we'll actually have a document that spells out why we were thinking this when these parameters were

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chosen. And we're missing that from the past, and that's actually hurting us today.

LARS-JOHAN LIMAN: Wolfgang?

WOLFGANG KLEINWACHTER: I am one of the non-technical persons in the board. And I'm approached again and again by people who are asking the question, you know, whether there are new options to add more root servers beyond 13. There was this proposal by Paul Vixie to go to 20.

Are there any new developments on what is the latest status?  
Are we fixed with the 13 and we'll continue with the 13?

LARS-JOHAN LIMAN: This is a question that comes back bouncing every ICANN meeting and 50 times in between them. I am aware of the pressure. I have yet to see a technical motivation for doing that.

I have yet to understand any other motivation for doing that. And I'm not saying that it's cast in stone for the entire future. But right now, there is no process to extend the number of letters. And if such a process is to be designed, it's going to be a very long and painful effort to create it.

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Do you want to say something?

STEVE CROCKER: Wolfgang is too timid. Let me push you much harder.

LARS-JOHAN LIMAN: I can always trust you.

STEVE CROCKER: I understand your point very well, of course, that there's no technical reason to do it. And the reasons are highly political. And it's delightful to be able to say -- to imply that they're not relevant. But they are unfortunately.

A related question is: Where do you think the decision process ought to be for something like that?

LARS-JOHAN LIMAN: That can be interpreted in two ways. The question can be interpreted in two ways. It is either where the decision for deploying the letters is to be taken, or whether the decision about how and where to create the process is to be taken?

STEVE CROCKER: Your choice.

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[ Laughter ]

LARS-JOHAN LIMAN: I was afraid of that.

SUZANNE WOOLF: I think one of the entertaining aspects of the question is actually that RSSAC hasn't discussed it as RSSAC. So I'm sure there's individual opinions and inputs to offer on that. But I do want to point out that there isn't actually a RSSAC position on it.

WES HARDAKER: It's worth noting that the number of the letters in the root today was another one of those past decisions that was grounded in solid engineering. It had to do packet size and all sorts of other stuff. Again, the documentation as to why exactly that current maximum was chosen is not around. And so any effort to change stuff in the future I think would require another fairly serious study as to what's the right metrics without breaking the Internet, right? Making change is hard.

STEVE CROCKER: I'm steering a course somewhat deliberately here, partly for the non-technical people and the new people on the board to

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introduce the subject and partly to have a serious technical conversation.

So, Wes, you and I have worked together a long time. It's not all that hard to do -- to redo the calculations. The packet sizes are bigger. The IPv6 addresses are bigger. One can sort of work out what the priming sequences are, whether or not priming sequences are or are not the controlling factor and so forth.

So partly as a bit of a challenge, I would say if it were -- if the question were so what are the technical consequences of changing it and what are the natural limits of that, we could probably do a decent job of gathering that information, most of which has already been done multiple times, putting it together in a week or two or a month or something like that and then two or three years of circulation and socialization of all of that on top of that.

But the gating item of having to get a sensible understanding that 13 is no longer the number, 5,000 would probably be way, way beyond anything that would make any sense -- and I'm being deliberately facetious.

I don't think that would be the dominant question. I think we could get past that pretty quickly.

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**WES HARDAKER:** Yes and no. As you have sort of hinted and have said before, the actual underlying question is actually not so technical as the technical merits are easier. You are absolutely right. That being said, I think in the same way that the reason why we're debating the number of -- excuse me, how we put the letters in the root zone and how we are dealing with TTLs, a lot of the times in the process of evaluating that, we actually find all of the question and all the metrics. I don't think we have know them all today.

I think -- you say a couple of weeks, but the reality is I think it will take a while to gather the opinions of who has constraints or believed constraints in coming down and nailing those and making -- getting consensus out of those.

**STEVE CROCKER:** Fair enough.

**LARS-JOHAN LIMAN:** John first.

**UNKNOWN SPEAKER:** I think it was Ray but somebody pointed out that the Internet today is not the Internet that it was when we went and made these decisions. So there's a lot more study to be done than just about changing the packet size and what happens in DNS. There

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is a lot of other devices out there that are affected by these changes. So I agree with Wes, that this is probably -- if somebody was to undertake that study, be it the caucus or whoever else, it would actually be quite complex to understand the implications.

LARS-JOHAN LIMAN: Thank you. George?

GEORGE SADOWSKY: Thank you. Steve, I thought you were going to go in a different direction. I'm going to try to supplement what you said. At the GAC meeting, prior to this meeting, there was talk about a root zone service issue, which I claimed -- I don't understand it. I need to understand it. That's not the point of the comment.

The point is that root zone service was mentioned in just about the same sentence, maybe the same paragraph, as transparency and accountability. And this, to me, is a major long-term red flag. We now have a situation with regard to the accountability issues where bottom-up and representatives of ACs and SOs are fashioning our future. And it's a messy process. We hope it converges. But the point is that I think this is a bottom-up groundswell. And when I hear "root zone service" and "accountability and transparency" mentioned in the same



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breath, I think: Are the root servers next in the process? And I think that this is very worrisome from my point of view.

STEVE CROCKER:

I had the privilege of being invited to the first retreat that root server -- RSSAC had a month ago roughly and made some remarks which I circulated to the board. And it was short. And the main point that I said is that this group is peculiar in the way that it has enormous trust across the community. Do a flawless job. Don't try to throw any weight around. Don't look ambitious. And things actually just plain work. And compared to any other group that you might match them up to, they just rank super high.

In contrast, however, if one comes at this group from a naive or uninformed direction, as is typical, for example, in the U.S. Congress, and asks the normal questions: Who's in charge? Who's responsible? What happens if something goes wrong? How are you financed? What are your governance rules? How do you replace each other? And so forth, the answers are short - - no, they're non-existent basically. And that leads to the potential for high risk that if those questions get asked in a very hostile way, that we're in trouble.

And I close by saying you are in good shape for a while because we're drawing all the fire and you guys are well-protected. But

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there could come a time when those questions get asked more forcefully. And I just left it at that.

WES HARDAKER: I wanted to switch topics. So if anybody else wanted to talk about additional letters, I'll yield the floor.

SUZANNE WOOLF: Shane has actually been standing there very patiently.

SHANE KERR: This is a meeting between RSSAC and the board, and I'm not in either body. But I feel like I have to stand up and talk because there was discussion that maybe we should do research into the issues surrounding adding additional roots and this kind of thing.

And I have been involved with the project for about six months now doing exactly that. We call it the Yeti Project. It is a root server test bed looking at specifically issues in changing technology used in the root server system. It's done completely outside of ISOC. It's a group of researchers doing this in a kind of ad hoc, independent way. We expect this project to go on another two years or so. And the idea is that we'll look at all the

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different technology issues, effects of -- including the effects of adding more root servers.

So there are also other ways to deliver root zone data other than just adding another letter, right? As soon as the root zone became signed cryptographically with DNSSEC, then in some ways the way that data is delivered becomes irrelevant. You can build an alternate mechanism. You can use technology outside of the DNS to deliver this data and things like that.

So if you start thinking about it in these kind of ways, you actually have a lot of flexibility and a lot of work.

In another sense, it is quite a shame that this work is going on completely outside of the standard Internet bodies. It's not an IETF work. It's not an ICANN work. That's done because of the toxic political nature of this discussion because in some sense, it's so political because most of the people that really want expansion of the root server system are doing it for non-technical reasons. They have these kind of emotional ties, which are very real. You can't ignore that. But it's not a desperate need of the technology not delivering the service properly. I think that's obviously not true.

The other part of this that means that one of the reasons we kind of had to do it this way is because of the closed and very secretive nature of the root servers and their operators.

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And just for me personally, I think it's actually -- I think this comment about the increasing scrutiny that's going to come, I think there may be concerns about that. But I think actually we who are not root server operators at least should welcome it. To be honest, I think the root server operators themselves should also welcome this scrutiny. Anyway, that's it.

STEVE CROCKER:

Shane, thanks very much. As a way of expressing our appreciation and welcome to this environment, we'll treat you as we treat everybody here. Who's in charge? Who paid for this? Who commissioned this? And why are you doing it?

[ Laughter ]

SHANE KERR:

Oh, absolutely. It's a Paul Vixie special. He's not --

[ Laughter ]

He's not in charge of the project. There's three coordinators right now. One is my company, the Beijing Internet Institute. We're not a government organization. We're an independent Chinese company.

Paul Vixie is another party.

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And then the WIDE Project, which is a research group in Japan is the other coordinator.

Right now, we have, I think, 12 or 13 different organizations running their own root servers on this network ranging from individuals doing it to Internet exchanges to other corporations. It's quite a wide body. It's on all Web site. If you go to yeti-dns.org, it's all there. We are continuing to expand the number of researchers. We actually haven't started our research part of this yet. We have been building out the infrastructure. But we have just about completed that phase.

As far as who's paying for it, there's no incorporated body. There's no non-profit or for-profit running anything. No one has signed a contract or anything. As I mentioned, it's relatively ad hoc.

The idea of this is not to set up a replacement ICANN or a replacement root server system. It is to do the research on the system.

Having said that, once the system is in place, which it is now, it is obvious that anyone with any budget at all could set up an alternate system certainly as an opt-in. You wouldn't have the scale problems that you do with running the real Internet. But you could start off small and grow it quite quickly. Someone with a large budget like many large corporations could set up --

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could completely use this as a model to replace the root server system. So...

I don't encourage that, but it is -- it is possible.

STEVE CROCKER: Thank you.

LARS-JOHAN LIMAN: Thanks, Shane. And I should mention that of course the root server operators and RSSAC are well aware of the Yeti project and that's one project. There are several others -- several other places where people experiment with DNS and root servers, and we try to keep an eye open and we -- we are -- how should I put it? -- looking forward to new ways to address the DNS distribution problem that we are actually part of.

So thank you.

SUZANNE WOOLF: Yes. The secretive and closed root server operators are happy to hear from you in this open meeting.

KAVEH RANJBAR: May I? Sorry.

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UNKNOWN SPEAKER: (Off microphone.)

RON DA SILVA: Well, and only to the extent that we've moved off of the -- extending the letters. Anybody else still on letters?

UNKNOWN SPEAKER: (Off microphone.)

RON DA SILVA: Yeah, that's what I thought.

KAVEH RANJBAR: So may I add a quick comment?

About the Yeti project and projects like that, we also actually discussed it in our workshop as well, and the main thing is that to my understanding none of us -- none of our organizations is clinging onto running the root operations as, "Oh, we are the ones and we have to do it," and we are open to all kind of new technologies but as soon -- as long as they are following open standards and community accepted methods of moving on with coming up with new ideas and standards. I might -- personally I might accept that maybe we haven't been in the past as transparent as we should have been. I think now it's much, much better, but replacing it with another or thinking in another

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framework which is still closed and not transparent, that doesn't solve the problem, so at least from my organization, RIPE NCC, any new approach which supports openness and transparency, we will fully support it.

CHERINE CHALABY:

Ron, I know you want to move us off the letter thing, but Lars, you mentioned what problem and -- you mentioned what problem. I just -- for everything that has been said, I don't know what is the problem that we're trying to solve, and you repeatedly said there are no technical issues. So is it a solution to a political problem or there is really a technical problem that needs to be addressed?

LARS-JOHAN LIMAN:

My personal take is that people are trying to solve some kind of political problem which I have yet to understand. It hasn't been explained to me in clear enough terms. Others may disagree. So is it -- sorry. I'm losing track here. Is it Paul, now, if we're still on letters?

PAUL HOFFMAN:

Yes. We're still on letters.

So Paul Hoffman. I'm ICANN staff.



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I wanted to respond to two things that board members said.

First, Steve, when you said the priming issue is probably quite easy to do, coincidentally in the DNSOP working group in the IETF, of which Suzanne is the co-chair, I'm the secretary, the priming -- there's a discussion about priming and just describing how it has worked historically. It's surprisingly fraught with disagreement, and even just this week, coming up on the list are -- are -- there's a draft that we're trying to get into the working group and get out of the working group, and it's actually being heavily debated. So it's not as easy as many of us would have hoped.

And to answer your question, you had started -- that started all of this, you said Paul Vixie had this proposal for -- you know, that it could go up to 20.

In fact, he has backed off and come back and such like that. Over time, even over the short period of time, those numbers change, and since that proposal has come up, there have been other technical proposals, some of which have gone through the IETF, that has caused Paul to change things and also to, for example, start the Yeti project and such.

So if we start the debate with "There's a proposal for such and such," if that proposal, technical proposal, is more than, say, a year old, it might have already changed. And in this case, it has.

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DAVID CONRAD: And just for clarification, that's Paul Hoffman. He works on my team at ICANN, office of the CTO.

LARS-JOHAN LIMAN: Let's take another staff.

RON DA SILVA: Excellent. Thank you.

So I'm assuming -- I lost a little bit where we are in the agenda but I think we derailed off the first bullet here, right?

So in publication and plans for other work -- work products of the RSSAC, last I looked, I think maybe half of the roots are dual-stack running before v6. Is that right? Or are they all dual-stack now responding both in v4 and v6? What's the current --

LARS-JOHAN LIMAN: I think my latest count is that 2 out of 13 don't, so 11 out of 13 do.

RON DA SILVA: 2 out of 13 don't? Yeah. So I guess the question I have is: Is there any coordinated statistics coming out of the team on native queries in v6 versus v4 and is that information that's

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being published somewhere and is there a pointer you can provide that if we want to see, you know, how is that progressing, we can take a look at that?

LARS-JOHAN LIMAN:

Yes. It varies from root server operator to root server operator, but there's definitely statistics being published. I know that K root are very up-front with their statistics, and I think also L root, possibly. I'm looking around the table here. A and J as well? Yeah.

So there are -- there are some that have reached further in their efforts to publish this.

I'm sorry I can't say the same for I root. It's not for unwillingness. It's just that we haven't had the resources to create the publication process that we would like to see where we delay the statistics a bit, to avoid being a very quick feedback channel for attackers, because the numbers you're looking for are not -- not very time-sensitive. If they're a day or two old, it's not a problem for you but it is for the attackers, so we haven't really had the resources to put that publication system in place yet.

But, yes, there is such information and please come and talk to us and we will guide you to it, if you would like.

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RON DA SILVA: So no active coordination effort around aggregating the statistics across the --

LARS-JOHAN LIMAN: Yes. Actually, there is. The document I mentioned, RSSAC 002, it specifies a number of measurements and one of them is actually the number of queries and I believe it also has address-type information involved in there.

And that is a coordinated effort where we strive to publish at least the -- the same type of information from all the root server operators. And I see that John is waving his hand to comment on this.

JOHN CRAIN: Yeah. And I'm changing hats slightly because I'm also on the board of an organization called the DNS-OARC, which is there for this kind of collaborative efforts and they are collecting all of that data and putting it in one place so that you don't have to go around to all the separate publications. I'll have to dig out a URL but I can pass that to the board.

LARS-JOHAN LIMAN: Thank you. How are we doing on time, Steve? I --

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UNKNOWN SPEAKER: (Off microphone.)

LARS-JOHAN LIMAN: 15 minutes, okay.

UNKNOWN SPEAKER: (Off microphone.)

LARS-JOHAN LIMAN: 15, yes.

So are there more questions? I have -- otherwise, I have a few more things I'd like to mention, but they're not pressing. Questions are more important.

Because otherwise --

Yeah. Please.

RON DA SILVA: I have another, and it's similar and it's actually, I think, related to the last item on the agenda here, which is statistics as well around attacks and, you know, what kind of aggregated data you're able to collect and report on to, you know, identify -- well, that's also another piece of it.

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You know, what methods are you using to identify attack-related queries versus non-attack queries, and are you able to catalog those and report on them and identify trends?

And then a corollary there is also: How are you addressing those changes in those trends? And maybe it's done individually by each operator or if there are best practices that are shared across? Aside from just throwing scale at it, are there other creative things that are being done to address the increases in attacks in the DNS system?

LARS-JOHAN LIMAN:

This is something that pertains to the operations rather than to -  
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You know, RSSAC is an advisory body to the board so this is something that should be addressed more to the root server operators in their capacity as root server operators.

That said, the root server operators also coordinate outside RSSAC, specifically for operational matters, and we definitely work together. We have -- we have a communication infrastructure between the root server operator organizations that is rather extensive, and we definitely talk, when attacks happen, and there has been software developed to handle certain types of attacks which is now integrated into the

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ordinary DNS software that you just lift off the shelf, so you benefit from it as well, but the TLD and root attacks were actually the underlying reason to create that type of software.

So, yes, it happens, but it's -- it's not collected and published because some things of these are rather sensitive.

If the attackers get wind of exactly how we work to mitigate the impact, they will change the attacks. And that happens. We can see how attacks change over time. And as we change -- as we change the countermeasure, they kind of find a new angle.

It's a slowly going pattern. It's not that we're seeing trend shifts. We see trends but not trend shifts. And it is something that happens on a -- I wouldn't say everyday, but at least every-week basis, so it's something that we deal with in our regular day jobs.

But, no, we are a bit careful with coordinate -- publishing coordinated results too much.

Daniel?

DANIEL MIGAULT: No. I'm sorry.

LARS-JOHAN LIMAN: In the back. Could you state your names, please, when you speak?

RAHUL SHARMA:

Good morning. My name is Rahul Sharma. I work with the Data Security Council of India, which is an NASSCOM initiative. I'm an ICANN fellow. I'm not sure if this is the right forum to pose the question on the role of VeriSign as the root zone maintainer in the overall IANA stewardship transition, but I don't know what the exact forum is, so if you think it's the right forum, then I'll expect an answer from this forum.

So in the overall process, the role of VeriSign as a root zone maintainer, since VeriSign is a third contracted party who performs the operational task of operating the root zone file, would also need, you know, some process change, and maybe it would require transition as well. However, VeriSign, being a contracted party in association with ICANN, had submitted a draft proposal to the board's consideration on whether this transition should happen or not, so I am asking the RSSAC official position on the subject and if RSSAC is giving some advice or recommendations whether the role of VeriSign -- whether -- should there be any other organization performing that role or should that role be transitioned to ICANN over the operations, and if not, would others be considered taking it up?



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LARS-JOHAN LIMAN: I can begin with saying that RSSAC currently does not have a position on this. I am looking to my friends to my right if there's anyone who wants to comment on this.

[ Laughter ]

LARS-JOHAN LIMAN: Only shaking heads.

SUZANNE WOOLF: Let me -- the position that RSSAC has taken is that what's essential is that the data be published and available through the service, and that's the extent of the position that RSSAC has taken on who does what or how it should be done.

Do you think that's a --

LARS-JOHAN LIMAN: To -- to back up, for me as a root server operator, it's very important that it's obvious where the source of data is.

No one should question my choice of data source. Today, this -- my choice is the IANA. The IANA points to VeriSign, and that I should pick up the information there, and I do, and I hope that no one in this room questions that that's the appropriate data for me to serve.

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My biggest fear is that this changes in the future, so that half of the Internet community says, "You should pick it up from here" and another half says, "You should pick it up from over there," and that the data is different. That's something that would be very, very awkward.

KAVEH RANJBAR:

Yes. So if I understand the question correctly, basically the answer is it's out of the scope of RSSAC because our job is to get a single file from a single source -- and for us it doesn't matter from where it comes -- and publish it in a specified manner.

So in RSSAC, we don't deal with that, how the file is composed and what goes in the content of the file. We just want to make sure it's a single file, unified, and all of us distribute it exactly the same as it was given to us. So that's the scope of RSSAC.

FADI CHEHADE:

And to finish this very good answer, so since RSSAC is clear this is, in a way, not their decision, therefore, you know, somebody's got to take the blame, so I -- I will.

We made this decision as part of our normal decision-making on how to best implement these requirements, and right now at ICANN, the sentiment is the most stable way for the next period, and the most stable thing to do in the next period is to stay with

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the partner that has done this for many years and to just maintain the stability. And I think all of us would agree that's the most important thing.

Having said that, it is important that the ICANN decision is -- leaves us with the flexibility in the future, and that I can assure you is the case.

In other words, this is important that as we exit this phase, VeriSign will be serving at the pleasure of the ICANN community and they will have a contract with us -- right? -- and that will be unequivocal, and then we as an organization will continue making decisions as we need to. But right now, stability from a partner that has done this extremely well for many years, we're trying to make the less moving parts as possible at this stage, and that's one less moving part right now, as you can go in the hallways and see how many moving parts there are.

RAHUL SHARMA:

Fadi, just a follow-up question. You mentioned that the ICANN has made a decision, so is it an ICANN community multistakeholder decision, bottom-up decision, or is it the ICANN board that has made the decision?

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FADI CHEHADE:

Let me be clear. This is an implementation decision. There are a ton of decisions I make every hour that are not -- I don't seek multistakeholder input for.

I base them on multistakeholder requirements.

But please let us just be very careful that if we move that the -- the roasting level of coffee in our machines has to be based on bottom-up multistakeholder decisions, we won't get anything done. So there is a level of community requirement that comes to us. Our job is stability and security and finding the -- and meeting this mission, and after a lot of dialogue and debate, we decided that for the period immediately now and as we are shifting the transition to a very different mode of informing the administrator how and what to do, this is the most stable thing to do. And you have to trust us that we're doing this for the stability and to meet our mission.

But you should -- in the requirements, it was also made clear to us that the community doesn't want us locked in forever with a contractor, so we will make sure of that, so that if in the future we decide this is not the best partner, we have, as a community, the option to decide that we need better requirements, better services, and then we will decide who can deliver these.

But that's for me to do, because at the end of the day that's what you hire me to do, and Terry, and David, and John, and all of us.

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You hire us to implement your requirements in the best way possible.

LARS-JOHAN LIMAN: Thank you. We are nearing the end of the -- of the meeting time-wise. Seeing no more hands, I would like to thank you all for receiving us and for giving us this opportunity to give a bit of feedback and update and please come and talk to us. Now you know what we look like. Please come and talk to us in the hallways. We are not hiding. We are here. We like to exchange thoughts and ideas and we are very happy to receive questions and comments.

FADI CHEHADE: And we thank you because of course given all the millions of dollars we pay you to do what you do --

[ Laughter ]

-- we thank you for your service. You know, when we all in ICANN spend millions of dollars on a million different activities and we speak about security and stability of the Internet, frankly the buck stops at this table. You are the ones who for years have faithfully, out of commitment to this great enterprise, kept the Internet stable and secure, and we trust that you understand how much we appreciate you and appreciate the independence

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you've had, but the commitment you've had to common principles.

So thank you for that. Thank you very, very much for that.

When Steve spoke earlier about the questioning we will get, I don't think we need to describe to you the post-U.S. government ICANN. I think you understand that. In a world where the Internet is not -- no longer just, you know, a simple resource, it's a resource that drives this coming year \$4.2 trillion of the global economy in the G20, a lot of this rests on our ability to continue showing the trust that has been built to get us here is trust that the world can continue to have. If this requires the great new opening that, Liman, you've led also with -- in terms of transparency and clarity and we're here to answer questions, let's continue that. Let's continue that spirit, so people know how you've done your work and why we should, without question, continue to trust this group to do this work, again, given that you do it mostly for the right reasons, not for anything else.

So thank you for that. You have our appreciation and thanks.

LARS-JOHAN LIMAN: Thank you.

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UNKNOWN SPEAKER: (Off microphone.)

LARS-JOHAN LIMAN: I could, yes. In the spirit of transparency efforts, RSSAC has an open meeting tomorrow. It will be probably shorter and more boring than this meeting. And I will again report mostly on things you've heard here, but you are most welcome to attend. We would appreciate if you're there.

UNKNOWN SPEAKER: (Off microphone.)

LARS-JOHAN LIMAN: Sorry. It's later today. Sorry. And someone will remind me of the time as well.

UNKNOWN SPEAKER: (Off microphone.)

LARS-JOHAN LIMAN: 2:00. Thank you. Yeah. So thank you all. Steve, any last remarks or --

GEORGE SADOWSKY: Just -- I just want to say please come back.

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LARS-JOHAN LIMAN: We're happy to. Please ask us questions and we will come back and do our best to answer them.

STEVE CROCKER: Actually they're shortening their TTL so they'll be back more frequently.

[ Laughter ]

Thank you all.

**[END OF TRANSCRIPTION]**