KOBE – At-Large Capacity Building Session and Q&A on Registrant 101 and RSSAC 101
Tuesday, March 12, 2019 – 17:00 to 18:30 JST
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JOANNA KULESZA: Good afternoon, ladies and gentlemen. Let us start almost sharply on the hour. I'll have the pleasure of moderating this At-Large Capacity Building session and Q&A. We are looking forward to your questions. Let me note right at the beginning. This is an open session. Anyone in the room can ask questions to our guests. We will be discussing issues of the registrant program we have here within ICANN. Brian Gutterman will be kind enough to present the first topic for today and then we will have Andrew McConachie discussing issues of security.

We will follow the agenda. You can see it here on the slide. I will be far more brief than ten minutes. I'll just briefly do the introduction and I'll hand the floor over to our guests. We'll start with Brian and then we'll move on to Andrew. We have 20 minutes – that might be more depending on how quick our guests are with their presentations – for Q&A.

So our suggestion is to start with the presentations. If you guys have questions, please kindly take notes and then we will move on to the Q&A session. Do we need to have the agenda approved

as-is? No, we're good. All right, good. So we're good to go. Over to you, Brian. Thank you.

BRIAN GUTTERMAN: Thank you very much, Joanna. Thank you for this invitation to join you this afternoon from the At-Large. We very much appreciate it. I'm keen on listening to some maybe ideas and suggestions that you all have about the registrant program work at the end of our session during our Q&A, so I encourage you to jot down questions, ideas, notes during my presentation and hopefully we can have a good dialogue at the end.

Happy to be joined also this afternoon by my colleague, Andrew. We hope you find this session to be useful. Thank you also to those participating online in the Adobe room also.

So quick first show of hands. How many people here are domain name registrants? Pretty good. And I did present to the ALAC in Barcelona, so I will try not to repeat too much of what I said then. I did focus on a recently published report at that session. I hope this presentation spurs some thinking on behalf of ALAC about how we can collaborate more in ways that are mutually beneficial moving forward. So thank you.

JOANNA KULESZA: So just very briefly. You have 30 seconds, John. Go.

JOHN LAPRISE: Thank you. For reference, tomorrow there is a session on compliance and Jamie Hedlund will be here, so if you have serious questions about compliance, you can either give them to Brian or we can hold them for tomorrow too, FYI.

JOANNA KULESZA: Thank you. Wonderful plug. Thank you, John. Back to you, Brian.

BRIAN GUTTERMAN: Okay. Slide, please. Okay, so registrant rights and responsibilities. Throughout all of our work at ICANN, we endeavor to serve the global public interest of domain name registrants and end users, of course, of the Internet by ensuring a secure and stable DNS all while promoting trust, choice and competition in the industry. Registrants are an integral component of the DNS. They are the entities or individuals that have acquired the right to use a domain name for a period of time via an agreement with the registrar or reseller, so that's sort of defining our overall objectives with the program here.

Registrants have important rights, which include the right to access information from their registrar regarding the processes for registering, managing, transferring, renewing and restoring

domain name registrations. They also have important responsibilities as well. Slide, please.

So, our overall program goals, you can see them there on the slide. They're twofold, the first one being education, so creating materials and conducting outreach around educating domain name registrants about their rights and responsibilities, the domain name ecosystem and how to navigate it and the ICANN policies that impact registrants.

The second and complimentary goal of the program, and sort of our more long-term vision is to identify together with the community, which is you, and raise awareness about issues and challenges that registrants are facing. So we can think about how to address these challenges, these issues, as a community together. So far, we've looked at some of our own data. We understand it's a small subset in terms of what registrants are coming to the Org with via our global support centers, our compliance department, our complaints officers, whatever it may be.

And we've sort of identified some of the common challenges that registrants are having and we've been creating on an ongoing basis, educational materials. So blogs, FAQs, other articles about these issues and trying to disseminate that widely.

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But what we wan to do is really do more engagement in listening to ALAC and to some of you who might be here, NCSG, NPOC. We're talking to the registrars themselves about the issues that their customers are actually having and we want to sort of spur thinking and cross-community discussions about these topics, these issues and these challenges so that we can address them together.

The program itself is cross-functional in nature, so I reside in GDD. However, the program really relies on the works of our registrars' and registries' engagement teams as well as GSE and policy folks that have been doing some outreach in capacity building with the community around the world. Slide, please.

So quickly, who are we talking about here? What I've said when I've spoken about the program, sort of target audience, registrants, millions of them, right? But the content that we're creating is not for domain investors with large portfolios, probably not even the sort of ICANN regulars, maybe even some of you that know these policies already. It's more so to guide mom and pop with a small business website or somebody with a blog who doesn't know anything about ICANN, certainly doesn't know that we're talking about them right now here, at an ICANN meeting in Japan. So that's our target audience.

You can see from our Global Support Center. This is sort of their typical registrant contacting them. They consider their website to be mission critical. Most of the time, they contact Global Support Center or our compliance team with a heightened sense of urgency. Something has happened, basically, to their website and they want to fix it. They're unaware, usually, of the Internet community, of the ecosystem, who is ICANN. Sometimes they don't even know who their registrar is and that's who they should be contacting. So oftentimes, little or no technical background and why should they? They just want a website that works. They paid for it and something has happened.

So this is the way we think when we develop our educational materials. How can we explain what to do in a simple manner? We translate our materials as much as we can, six UN languages, and present these educational materials for registrants so they can get their lives back to normal and get their websites back up. Slide, please.

I'll go quickly through this portion. This is just some data from our Global Support Center, and later, compliance, to I guess give you sort of a snapshot of what we look at when thinking about what sort of educational materials to create. So again, we totally acknowledge that this is a very small subset of data pertaining to registrant issues and challenges. The data that speaks to

more is probably the data that the biggest registrars in the world have about their customer issues, right?

So here, this is a little bit about the contact volume over the last three or four years. You see there 35,000 cases logged with our Global Support Center from registrants approximately. Pretty consistent volume there. We found, in terms of a regional breakdown, North America being the largest chunk but also lots of questions from other regions, of course. Slide, please.

I can talk a little bit more about what the Global Support Center does. They have call centers. They receive questions and inquiries from around the world, not just from registrants. It can be from anybody. And the top drivers there in terms of the main issues that they're coming to the Global Support Center with in terms of the registrant context specifically, questions about domain name management, their WHOIS information, rights protection, domain abuse, some about new gTLDs, some observations from, again, our Global Support Center, colleagues.

How do they find us? How do they find the Global Support Center through their registrar, through Internet searches, the complaints office, routes, questions to the Global Support Center.

What does the Global Support Center do? They help these registrants identify who their registrar is. That's pretty common. They talk about the process. They navigate the registrants to information in ICANN Org. Some of that information is the content that we have developed in our program. They talk a lot about what's ICANN's role and what ICANN's role is not. ICANN can't help them. It's their registrar that they need to go to most of the time unless it's a real compliance issue that is taking place. Then compliance will handle that in the proper manner. Slide, please.

Contractual compliance, John pointed out that I think you're going to get a presentation from compliance tomorrow so I won't go through this too much. This is compliance's role through sort of a registrant's lens, so it will be a little different from what you have tomorrow. So we can skip this slide because you'll hear more about that.

Some data from the contractual compliance team from last year, some of the top complaint types that they are getting from registrants. Again, like Global Support Center pertaining to WHOIS inaccuracy, domain name transfers, domain name deletions, renewals, some about abuse, and so those are sort of the top trends.

They don't track compliance if the complainer is a registrant or not, but they can typically tell the most common types of complaints that are coming from individual registrants which you can see there.

We've also uploaded this deck, so if you're interested in this sort of data, I encourage you to look into that and compliance has a lot of great data which this is pulled from on the ICANN website and I'm sure they'll speak a little bit more about that tomorrow in their presentation. Slide, please. You can skip this one too. Slide, please. That's just some more recent data.

So what are the most common WHOIS-related complaints? Some examples here. Registrant is saying that their domain has been suspended or deleted for non-response to registrar or reseller. They are unable to update their registration records. They can't access their control panel or they're just not getting a response from their service provider or their reseller. Slide, please. Thank you.

Some common transfer complaints. Again, I'll go through these quickly. They are unable to receive an off-info code via their control panel for whatever reason. These are codes that they need to initiate transfers and if you want to learn more about transfers and that process, we have some educational materials

that we've developed on transfers. You can check that out in our educational resources.

They are requesting transfers between service providers. They're transfer, it was denied and there is an additional fee being applied and they're confused about that. Slide, please.

Some renewal complaints. Registrants are supposed to be getting renewal reminders and sometimes they didn't get it for some reason. They're checking the wrong e-mail or the reminder was not sent. Registrant was not able to renew or restore their domain name because the control panel was inaccessible. Again, queries about fees. They weren't getting the right information about renewals and redemption fees, etc. Slide, please.

So again, we will take questions, I believe, after Andrew's presentation. But please write down your questions as you have them. That's just an example of some data. Some of that sort of data is what I presented to you guys last time.

So our educational resources, they can be found at ICANN.org/registrants. They are sort of categorized there. There's a left menu navigation bar so you can learn about, registrants can learn about all sorts of different topics and can see that the content we've developed and adopted some pre-

existing content that we had at ICANN Org beforehand. Slide, please.

In December, we published after some extensive sort of development internally, as sort of a new batch of content on renewals and expiration. Again, why did we choose renewals and expiration? Because we had learned from our colleagues at GSE and compliance that these were some of the most common questions were about renewals and expirations. So we wrote a blog. We developed FAQs. We developed an infographic and we got all of these things translated.

Some of the main messages, very high level. Understand the terms of your registration. Mark your calendars. Consider the auto-renew option. Keep an eye out for renewal reminders. So a little bit more on that.

So when you register a domain name, you're able to use it for the period f time you registered it for which is typically between one and ten years. But, of course, if you want to keep using the domain name and any of the services associated with it, you need to renew it. Again, this seems obvious but so many people just think that they're going to have it forever. They don't realize they need to renew it. They aren't getting the reminders and they lose it and that's the worst case scenario. So these are some of our tips or suggestions that you can see.

So again, we encourage you to go to the educational resources on ICANN Org. Take a look. We think they're pretty interesting and are pretty useful. Slide, please.

Here's the infographic, again, that I mentioned. And it sort of walks through the post-expiration life of a domain name. So if you're registration expires, there are scenarios in which you can get the domain name back. There are policies around that. However, what we suggest is that you don't want to let your name get to that stage, so what we suggest, renew it before it expires, right?

There are some policies that dictate that the registrars or registries have to give you the option to get it back. However, that's not always the case and once the domain name does go into post-expiration, it can go out to the free market. It can be up for resale in certain areas down the line and that's not something that you want if you want to keep your domain name and the services that go along with it. Next slide.

Another example of the content. So there's a policy. The expired registration recovery policy, which sort of outlines a lot of these things in terms of post-expiration, what registrars need to do in terms of informing you that your domain name might be up for renewal, what you need to do to do that, and then what happens if you don't do it and you think, "Oh shoot, I should

have renewed it." What are my options? Can I pay a little extra to get it back?

So we have a series, sort of five things every registrant should know about the ERRP. We've also done content that five things every domain name registrant should know about the transfer policy, five things they should know about the WDRP, the WHOIS Data Reminder Policy. These are ICANN policies that informed registrants, we suggest they learn at least a little bit about these and the way they impact them. Slide, please.

So in Barcelona, I presented volume one of the report on issues and challenges impacting registrants. This is a bit of a teaser. Volume 2 will be published in the next couple of months with updated data. We tried to listen to the community about how we could improve that report, Volume 1. Volume 2 will have a lot of the same information, some of the data that you saw before from the Global Support Center and compliance.

The purpose of publishing this report, we understand it's a small subset but we want to inform the community and get the community thinking about what are these common things that the registrants are having problems with, and how can we fix it? Here is some data that says, "These are real problems that registrants are having."

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We also want to encourage, perhaps, registrars to share some of the data they might have about their customers' problems with the community, again, just to spur discussion across stakeholder groups about these issues and challenges because we think that helping registrants is something that everybody can get behind in the ICANN community. Next slide.

Okay, I think that wraps my presentation and I'll save sort of my open questions that are in the deck for our Q&A. Yeah?

JOANNA KULESZA: Brilliant. Thank you very much, Brian. I thought I was doing pretty good on acronyms and I have a whole page of new acronyms here. Thank you for doing that.

I'm going to swiftly hand it over to Andrew, and as already said, if you guys have questions, please make sure you note them down and we will get right back into the discussion after your presentation. Over to you.

ANDREW MCCONACHIE: Thanks, Joanna. [Spanish translator 23:15-23:36]

JOANNA KULESZA: Are we good? We're good. Thank you.

ANDREW MCCONACHIE: We're good? Okay. Sure.

So what is the RSSAC? Well, the role a Root Server System Advisory Committee is to advise the ICANN community, and primarily, the ICANN Board on matters relating to the operation, administration, security and integrity of the Internet's Root Server System. And I'll be explaining in a few more slides what the Root Server System is, but as you can see from that very short description from the ICANN bylaws, this is a pretty narrow scope of what the RSSAC does. Next slide, please.

So the Root Server System Advisory Committee is composed of appointed representatives of the Root Server Operators, sometimes also called RSOs. Alternates to these appointed representatives and liaisons from … There's a liaison from the SSAC, there's a liaison from the IANA, there's a liaison from the Internet Architecture Board, and there is a liaison from the Root Zone Maintainer and I'm pretty sure I got them all there.

There's also the RSSAC Caucus. The RSSAC Caucus currently has about 100 members, a little bit over 100. I think it's like 106, but it's growing pretty continuously so it's slightly over 100. And this is a body of volunteer subject matter experts. These are people who know a lot about DNS. Some of them may have expertise in Root Server Operations. Some of them may just have expertise on the technical side of DNS, either running authoritative or

recursive servers or [B] policy experts. And RSSAC Caucus members, there's a membership committee that's composed of both RSSAC members and RSSAC Caucus members that confirms new members to the RSSAC Caucus. But I think, in fact, I'm sure that in the history of the RSSAC Caucus, no one's ever been turned down so I would encourage if you, yourself, or if you know people that are very interested in the Root Server System and what the RSSAC is doing or what the RSSAC Caucus is doing, to apply for membership to the RSSAC Caucus. Next slide.

So this slide gets a bit more into the scope of the RSSAC by breaking up the root zone and the Root Server System. Oftentimes, these things are confused. I know most people come to ICANN meetings to talk about the content that is in DNS and the domain name system whereas the RSSAC is really interested in serving the root zone and only serving it, and the RSSAC is not really interested in the content, as I mentioned on that earlier slide on scoping. So this slide kind of compares and contrasts the two of them and on the left, we have the root zone which is really the data that is served by the operators, and on the right-hand side, we have the Root Server System, which is the system that's composed of actual servers that are distributed around the world and that serve the actual data.

So most people, I'm sure, are aware of what TLDs are, so the root zone is composed of TLDs and how to contact them and it is

managed by ICANN per community policy. It is compiled and distributed by the root zone maintainer, that is currently Verisign, to all the Root Server Operators. And again, like I said, this is the database content in the root servers.

Now the Root Server System, on the other hand, is the system that responds with the data and the root zone. It is currently composed of 13 identities and 12 operators, and there are over 1,000 anycast instances distributed around the world in different physical locations and the role of the Root Server System is purely technical. It is just to serve what is in the root zone and nothing else and it is the responsibility of the Root Server Operators. Next slide, please.

So on to some definitions. I've talked about the Root Server System a little bit. It's really just the set of root servers that collectively implements the root service. It sounds a little bit recursive, but that's really what it is. It's a set of root servers that implement the root service, and by the root service, they answer queries.

The root zone, as I mentioned on the last slide, is the data that is in the queries or responses to the queries. Sorry. And then a root server anycast instance is one network location responding to DNS queries on a Root Server Operator's IP address. So you can kind of think that you have the Root Server System which is

composed of Root Server Operators, and then each one of those Root Server Operators which is an organization, has many root server instances. So they're all running multiple instances and that's how you end up with over 1,000 instances around the world. Next slide, please.

These are some roles that are commonly … that are useful to know and understand in the RSSAC and its work. The Root Zone Administrator, this is the organization responsible for managing the data contained within the root zone, so this is basically the IANA function which involves assigning the operators to top-level domains and maintaining their technical administrative details. And you have the root zone maintainer and their role is really compiling all of this information into a single zone file format, cryptographically signing it and then distributing it to the individual Root Server Operators who then distribute it to all of their instances.

And then you have the Root Server Operator and they're currently in the RSSAC. All of the Root Server Operators have a primary and an alternate representative and yeah, there are 12 Root Server Operators. They're an organization responsible for managing the root service. Next slide, please.

So this slide kind of ties together everything that's been in the previous slides in one diagram that I'll walk you through. On the

left-hand side, you have the TLD operators and on the right-hand side, you have DNS resolvers and users. So you can think of users and their DNS resolvers are on the right-hand side of the screen and then TLD operators are on the left-hand side of the screen.

And when a TLD operator needs to change its NS records in the root zone, it needs to change how it is listed in the root zone essentially, it will contact IANA, and you see the IANA function is listed there and then the IANA function will send these changes to the root zone maintainer. And the root zone maintainer is then responsible for batching up all of these changes and creating the root zone file, and also cryptographically signing it.

And then they are going to distribute it to the various operators who will then distribute it to all of the various anycast instances you can see there at the right, the little circles with RS in them. Those are all of the different anycast instances.

And then on the far right, you have DNS resolvers and these are recursive resolvers run by ISPs or you can run one in your home. These are just recursive resolvers around the Internet that users are using and these resolvers send queries to the anycast instances and they receive responses. Next slide, please.

That's it. This presentation is really a scaled down version of the RSSAC How It Works presentation which is given at the first and

last ICANN meeting every year. So it happened on Saturday and Sunday. If this topic interests you and you wish to learn more about this, I encourage you to either watch a recording of the RSSAC How It Works session on the Root Server System or attend the next time that presentation will be given, which will be at ICANN 66 in Montreal. I'm going to stop now and for questions, we have the co-chairs of the RSSAC who are going to be taking the questions. So thank you very much for your time.

JOANNA KULESZA: Brilliant. Thank you so much. Those were two very interesting presentations. I actually have a few questions on my own, which is good because I consider myself completely ignorant when it comes to this wonderful technical stuff. But we have questions in the room. Heidi is kind enough to keep the list for me and Humberto is first. Over to you for a question, Humberto.

HUMBERTO CARRASCO: Thank you very much. I'm going to speak in Spanish.

JOANNA KULESZA: Whether this is going to Brian or Andrew or both of them?

HUMBERTO CARRASCO: I have a question for Andrew, so he needs interpreting.

JOANNA KULESZA: [Inaudible] which is represented in the room, I understand. Is that correct? Yes and there's a roaming mic.

HUMBERTO CARRASCO: If the team is here, that's perfect. I'm going to ask my question now. The RSSAC is a very technical issue for a lawyer like myself who does not have a very technical background. There are two issues which I assume were not dealt with because of a time constraint but I would like to know which is a governance model RSSAC has on one hand, and what is the policy development process they have, if any. Could you clarify this please?

BRAD VERD: Thank you for your question. I believe there was a two-part question. One was what is the policy development process we have and what is the governance we have? So right now, obviously, RSSAC itself is a mandate of the ICANN bylaws and it's an advisory committee to the ICANN Board and the community. I believe maybe what the question was more focused towards was the root server governance and the policy development that might come out of RSSAC around that.

So RSSAC itself has been undertaking a pretty hefty lift because there hasn't been any root server governance for forever. This

goes back to history and the organic growth of the Internet. This predates IANA. It predates ICANN. The root servers were put in place originally as the organic growth of the Internet happened. Jon Postel was, essentially, kind of the arbiter of that and he never really documented the process for adding or removing any root servers.

So RSSAC starting, I believe, in 2015. I don't remember the date. It was three or four years ago. We started the process of creating a governance model, which we presented to the Board last year. The Board has it. It's RSSAC 37 if you haven't read the document. And then it's combined advice to the Board as RSSAC 38. That combination presents a proposal for a Root Server System governance, which is, we feel, pretty comprehensive. We've been working all of this meting with the Board, specifically with the BTC on moving that forward. Right now, the responsibility of 37 still resides with the Board. RSSAC is waiting for a response on that, but we've had a very close relationship with the BTC and the Board to move it forward. So hopefully, that's a single answer to both of your questions. Thank you.

JOANNA KULESZA: Brilliant. Wonderful. We have a queue. I'm going to read out the queue and we'll go with the queue first. So if you have questions, please kindly let us go through the queue first. Note your

questions and we will get back to you. So we have John, Alan, Sébastien, Eduardo, Wale, Holly, Sergio, Bartlett, and then Evin has some remote questions. Thank you very much. That is wonderful. So we will go through that list first and then you're calling back your question. All right, good. So I'll still go through the list and then we'll see how we do on time.

So I have John first. John, over to you for the question please. Kindly direct your questions either to one of our participants, one of the presentations or both of those. Thank you.

JOHN LAPRISE: Thank you. So my question is to Brian and that is if we go back in your debt to the slides that revolve around common complaints. If I'm looking at those, I'm thinking those are the symptoms of the problems. Have you done any analysis about what's causing those complains and then direction education to address those root causes.

With respect to your request for help about how to make things better for end users, I think that's the figuring out why people are having these complaints and then addressing the cause, I think is the way to move forward. I also have a comment and I'm going to put my hat on as Vice-Chair for policy of ALAC because if you have not read RSSAC 37 and 38 and you are in this room, you should be reading it. It's a very important policy document

and we should probably be supporting it going forward towards the board, but it's something you should be made aware of and I, again, commend RSSAC for the document. It's great work. Thank you.

BRIAN GUTTERMAN: Thanks, John, for the question. You know, that could be maybe a better question for somebody from the compliance team tomorrow. However, I will not dodge it. So I'm looking at some of these common complaints and this is sort of information from the compliance team.

But in terms of thinking about taking a step back, what are the kind of big picture problems? I think some of them are there that I mentioned, a lack of understanding from registrants about the ecosystem, who to contact and why when they're having a problem technically with whatever it is, their website, their e-mail, with their domain name. So a lack of understanding there, a lack of awareness, some communication problems with the registrar or reseller, they're not able to find the right contact information about who to contact for whatever reason. Registrars have a wide scale, variety of customer service information and resources depending on the size of the registrar, who their audience.

The one thing that we know, and I know we speak to sometimes is even language problems. Sometimes the person who's having the problem, they don't speak English but they're looking at their registrar's website and the information there is in a language that they don't speak. So it's things like this that are maybe some of the root causes that lead to these types of complaints. So I hope that helps a little bit and answers your question.

But it is. We're trying to think and learn about these bigger picture root problems and not just looking at these specific I can't access my control panel, I don't have the auth codes or the more technical things.

JOANNA KULESZA: Brilliant. Thank you very much. Over to Alan for the next question. Go ahead.

ALAN GREENBERG: Thank you very much. A couple of more comments than questions. During the EPDP discussions, At-Large took a position saying we have to support the end user, not registrants as such and not look at the privacy, and of course, the question comes up, don't we care about registrants? And I'll just point out that the ERRP, the Expired Registration Renewal Policy, came into

existence because of a PDP that was initiated by the ALAC and I happen to have spent two years of my life chairing it. So yeah, we care about registrants.

The other comment is a follow-on to John and asking. Your answer was, "Yes, we look at things and try to see, do we need more education or issues like that?" That's one of my pet peeves. One of the reactions that I would hope from ICANN Org on analyzing complaints is, "Oh, it looks like we have a problem." It's not a compliance problem, but a policy problem, that we just don't have a policy addressing this and maybe we should.

And in my 12 years in ICANN, I have very rarely seen an example of ICANN Org coming to the GNSO or to the ALAC and saying, "Is there something we can do to make sure we have a policy to fix this problem? Because it's not just education." And I can't believe the situation never should have shown up in 12 years, so I really build that into the DNA also, of recognizing you're not just enforcing policies but if you recognize the need for a policy, someone should be saying it. Thank you.

BRIAN GUTTERMAN: Thanks for that and I will take that into consideration and I think that's something that maybe you can raise with compliance as well and it's also our intention to sort of spur, by providing this

sort of high level, understandably a small sub-set of data, to spur the community who should be the ones taking action on policies, right? But I take your point and I do appreciate when you mention that you're developing the ERRP. I'm not sure when that was, but that was great and you were looking after registrants.

ALAN GREENBERG: Thank you. Just for the record, we have mentioned to compliance multiple times, rarely seen any effect.

JOANNA KULESZA: Thank you, Alan, for the question and for the ERRP as well. Sébastien, your question.

SÉBASTIEN BACHOLLET: Thank you. I'll speak in French. First, I would like to thank the participants who are root server managers and all RSSAC members who have been working. I agree with John in the sense that the documents developed by SSAC and RSSAC to speak of the governance and the governance of root servers is absolutely essential and that they have done magnificent work.

Now I have a question on the presentation. I thought I saw a number. It said 13. 13 what? Is it 13 root servers? I thought you

had 12. I might b wrong though, but why was there 13 in there somewhere?

I'd also like to know whether the 12 or 13 root servers all had anycast instances or only some of them have instances. And do you have a map of the distribution so we can see where these 1,000 anycast instances are? One thousand is absolutely extraordinary. Thank you.

BRAD VERD: I'll start and then maybe Fred can finish. A couple questions in there. There are 12 Root Server Operators and there are 13 identities. So the 13 identities are the actual identities that are listed in the root zone. Each of the identities has a v4 and a v6 IP address. All 12 organizations are anycasting, so there are multiple instances of those IPs located around the world and each one is different. I can't tell you exactly where they are, but if you go to root-servers.org, that is the independent webpage of the Root Server Operators. There is a map there and there is the details on a per identity basis as to exactly where they're located.

Fred, did I miss anything?

FRED BAKER: Well, just a detail. As you go to that location and look at the map, you can kind of zoom in and zoom out, and so you can see at varying levels of detail where they are. So it might say that there's one operator in France if you look at it at the high level. And while I guarantee there's a whole lot more than that, you zoom in, then you'll find more of the stuff.

UNIDENTIFIED MALE: Sorry, just can you say again the website please, address?

FRED BAKER: So it's root- …

JOANNA KULESZA: It's in the chat.

FRED BAKER: I'm sorry?

JOANNA KULESZA: It's in the chat. Alfredo Calederón posted the link in the chat so you can either write it down instead of having Fred have to spell that out. Brilliant. Thank you so much and now Eduardo, your question please.

EDUARDO DIAZ: Thank you, Joanna. I have several questions which are very easy to answer. First for the bill, is the GDPR affecting this thing or not, where you provide help? Like if I call, which one is my registrant and if the GDPR is affecting this, since now you cannot find even anything about who has what there and there. And for the RSSAC, for the root server [inaudible], the other hand on the rest. When you provide the advice, is this advice public or confidential? And I'm just wondering if the root server is a PC or one server located somewhere in a special place and if when people enter their information into this machine, is it one person, two, three? Is there a process?

And lastly, I'm pretty sure [inaudible] people want to attack this system because it would be fun to screw up the entire Internet somewhere, if you have any problem in. In all these years, it has been up and running 100%. Those are my questions. Thank you.

BRIAN GUTTERMAN: sure. Thank you, Eduardo, for the question. The answer is, yes, there has been some impacts post-GDPR and this is something I know I would encourage ALAC to engage with registrars about this, asking this sort of question. I can speak to what we have heard at the Org. But again, like I've said, the information we have about registrants issues and problems is a very small sub-set because we're ICANN and the registrants really shouldn't be

coming to us with their questions. They should be going to their registrar. That being said, yes, there have been some questions post-GDPR, specially about WHOIS in accuracies and in information. So for example, registrants, they're unaware of what GDPR is and why, what they had in the public who is not there anymore.

Okay, my information used to be there. Why is it not? What's happening? So we explain. No, and since the temp spec has been an in place. Some reporters actually want their information there, right? So it's not everybody is "Oh, happy," about that my information isn't there anymore. Some people want their information to be there so if somebody wants to find maybe more information about what's on their website, usually they'll have a contact, something there on their website but sometimes people feel better with having their information displayed in the WHOIS so they say what happened.

So there has been an impact. From what I've been told, it hasn't been as drastic as maybe some people thought in terms of an outcry from registrants about what's there because, again, most people, registrants, the majority didn't even realize that their was a WHOIS data place in the first place. We here at ICANN who are talking about this all the time know that it's an important issue and that it's changing, but the majority of registrants

didn't know that it was there and they don't know that there was a change either.

FRED BAKER: Okay, and to your questions about the Root Server System, let me try to address them. Remind me if I miss parts of it.

The Root Server System started in 1984 when the DNS, the protocol was actually designed and people first started deploying it. So in 1984, I think there were two systems that were acting as a root server, acting as a DNS server, and in 1985, there were four of them and it grew over time.

The last identity was created in 1998 so at that point, we had 13 systems or 13 services. It's probably pairs of systems. And about that time, and the idea was one machine, one address so if I want to have two machines, I guess I'm going to have two addresses, whatever you're going to do with that.

We started looking at the question of scaling the DNS. We noticed the Internet was growing. I don't know if you are aware of it, but there are a lot of people out there. And so how can we actually serve that very large community? And looked at the idea that we might have many machines that have the same address. They have another address that you can use to manage them, but that if you sent a packet to whatever that address was, you

would go to one of those systems and that one system would respond to it but it would go to whichever one happened to be operational at the time. That's a technology that we call anycast that was developed as a concept in the IETF and originally deployed by M-Root in Japan and then by F-Root [SC] pretty widely. And since then, each of the operators has picked up that technology so now all of the operators are anycast operators.

The implication of that is we have far more than 13 machines. In fact, we have over 1,000 and they are located everywhere you can imagine. So the objective with the root service deployment is to literally provide good service, consistent service everywhere and should something go plop, well, fine it went plop, but the traffic will go to some other server and be responded to from there.

Now has the service ever gone down? No, the service has never gone down. We actually had a very interesting event in 2014. Traffic to the root service increased by about two orders of magnitude, 100 times as many packets per second and that was sustained for a period of a couple of hours, and then it went away. And not that anybody stopped it. It went away. The source stopped sending that traffic.

That was reported on in an academic paper, Wes Hardaker from USC, who operates one of the root servers, and some people at

the University of Twente in the Netherlands. Analyzed the data, looked at everything, reported on it, wrote a paper. That paper came out in 2015 and you can find it on the web if you go look for it.

Their very interesting observation in the paper was that even though traffic went up two orders of magnitude – that's a lot of traffic – the impact was so small that they weren't sure it was an attack. The Root Server System has never failed.

BRAD VERD: If I can just add one clarification there, we talk about 1,000 instances globally. Each of those instances are managed by the 12 organizations. Each of the organizations manage things differently and have different approaches to the operations of their organization and those systems. So while there might be one instance at that one instance – I'll speak for me because I'm Verisign and we operate A&J – so one IP address or one instance of A has hundreds of servers behind it at a single location while you go to other parts of the globe in far to reach areas that you'll have something less. So we scale our systems based upon where they're installed and the traffic that is available to them at any given site.

And each of the operators does the same. So if you're going to install it at a large, prime location with lots of bandwidth, you're

probably going to put in man servers at that location. If you're going to be at a small [inaudible] exchange in Curaçao, you probably don't need lots of servers. You probably need one. So it depends. It varies all over the globe.

JOANNA KULESZA: Thank you. Yeah, just very briefly then.

EDUARDO DIAZ: Well, I didn't get an answer is the advice was confidential, and second, in the root, who hits the return to make the thing happen.

BRAD VERD: Sorry, apologies. Yeah, so the advice is public. It was given to the Board. All of the RSSAC meetings are public. Minutes are available. We have meetings all week. You're welcome to come and participate.

As far as who hits the button, Andrew put up the picture that showed the IANA function and the Root Zone Maintainer. The Root Zone Maintainer is the organization that builds the actual root zone, cryptographically signs it, validates it, does a whole bunch of stuff to it, and then once it passes all the tests and says it's good, gets published to the root servers, and that's where

the automation takes over because you're talking thousands of servers all over the globe. And within less than three to five minutes, every server is updated around the globe.

JOANNA KULESZA: I don't mean to barge in but I'm so disappointed because I always inspire my students with telling them that the Internet might be attacked successfully, it might come down and this is a critical situation. And you guys just spoiled the surprise for me there saying, "No, nothing's going to happen. It's all safe." I have a queue here. Thank you. I'm really enjoying this conversation. In a way, it's consoling to me that you've taken away my favorite example of the Internet being brought down by evil attackers. So I have Wale, I have Holly. I have Bartlett. I've promised Evin we will take remote questions and time permitting, we'll restart the queue, and you're first on that restarted queue if that's okay. All right? So Wale, your question is next.

WALE BAKARE: Thank you, Joanna. My question, really, basically, I'm from technical background so I work in the IT industry for some time anyway. Right. It's about these instances, the [inaudible] or the [inaudible] root servers [inaudible].

What factors actually determine the number of instances each of these authoritative name servers will have? That is one. Then two, subset of that question anyway, if you have to create an instance for the, maybe number of instances for a particular root server, do you create this based on the functional requirement or the non-functional requirement in terms of scalability, performance, in terms of impact, the numbers of instances you have? That is [inaudible]. What determined the location or geolocation of the instances? Thank you.

FRED BAKER: Well, okay. Your first question, you wondered where the number 13 came from.

WALE BAKARE: Not the 13, the instances. For instance, you are a parent, then the child. How many children if parent server? What numbers? What determined the numbers of each of the …

BRAD VERD: So I think what you're asking is what are the factors determine the number of instances behind each identity?

WALE BAKARE: Absolutely.

BRAD VERD: As I stated earlier, each identity is operated by an independent organization. Each organization, each of the 12, are managed differently which builds to the resiliency of the system, so there's no one thing that can take it down. So they manage it differently and each one has a different number of instances. So if you go to root-servers.org, the webpage that was provided earlier, it will show the number of instances and their locations on a per identity basis which I think answers your last question.

I think there was a second question in there as to what were the factors for choosing a location. Was that correct?

WALE BAKARE: Yeah.

BRAD VERD: Okay. Again, that's dictated by each individual Root Server Operator. As I stated earlier, I can speak for the one that I operate, which is we offer providing instances all over the world. If somebody wants to host one for us, we're happy to partner with them. We will provide the server and you provide space, power and ping. And we will work with you to set it up. And based upon your user base that we're accessing for that instance, it might be one server, it might be hundreds of servers.

It really just depends on the specifics. It's a situational answer. There is no one answer to your question. It depends on the network behind it and who's actually accessing it if that makes sense. Fred?

FRED BAKER: Not sure I really have anything to add.

JOANNA KULESZA: So we will move on to Holly. Your question?

HOLLY RAICHE: And actually to Brian, have you thought about, say, just some focus groups or something to see if where the information is, is actually someplace where people go [inaudible]. The reason, I just looked at the website and you've got domain name registrants. I will give you odds on that a registrant doesn't know that's what they're called. So to make … Have you done a lot of work [inaudible] how to actually make information available in a way that people are going to understand where to go and how to find this stuff? Thanks.

BRIAN GUTTERMAN: Thank you, Holly, for the question. We have thought about this and it's something I didn't bring up, something you've heard

about that we hope will improve the user experience in terms of people – I'll start with this – accessing this information from ICANN Org is the ITI Initiative and what that is doing is really trying to improve the user experience, not only for registrants who want information. Sometimes they want information from compliance at ICANN. Sometimes they want it from Global Support Center to contact them directly. Sometimes they just want to learn more, right?

So what that is doing is reorganizing the content and we are putting a lot of resources into thinking about what's the right entry point for somebody who comes along and we've actually talked about this. People don't know that they're registrants. You have a domain name and you actually don't own the domain name. You're sort of renting the domain name, right? Everybody talks about it in different ways across the industry, what it means to be a registrant and domain name holder. So the terminology, it's something that we need to think more about and something that the ITI is working on.

And in terms of getting the materials disseminated to the people that really need it, that's where we are trying to work with registrars better to have them adopt it and use it themselves, so have our information on their customer service sections of their website so when their customers go to them, which is where they should be going, they're finding it and clicking and getting

what they want. So there's a lot of work to be done there and that's just kind of communicating with them and if it's an FAQ, having them adopt it and use it, and get it translated when need be if they need it in a different language. So always more work to be done there but that's a really good point.

JOANNA KULESZA: Brilliant. Thank you. We have roughly 18 minutes. I am going to give Bartlett the floor. Then we'll move on to remote questions and then briefly to Alan. Thank you.

BARTLETT MORGAN: Thank you. My question is for the RSSAC guys. First of all, thank you so much for coming here and sharing with us. It's certainly been helpful for me. I've been trying to follow after your sessions, this meeting and I've just been learning a lot more. I'm not completely there, but I think my question is really just kind of at a high level, trying to figure out, in your minds, is there any practical opportunities for you guys and the ALAC to collaborate, short, medium term going forward? Or just to put it another way, is there any kind of help you may need from us in any way? No is acceptable.

FRED BAKER:	I'm going to give you a qualified no. No, we haven't thought of any at this point. That's not to say that we will never think of any, but one thing that I think would be good. We're going to have some community discussion, community review of RSSAC 37 and a concept paper that's being discussed with the Board right now, and gee, if you see something that needs to get fixed, tell us.
BRAD VERD:	Yeah, I would echo what Fred said. We are completely open so if there is something we can do or if there's something you see that we need to do, please ask. These sessions where we can help inform the community, I think are very beneficial because RSSAC is not very big. It's a small committee but it is, if you look at the graphic that Andrew shared, it's half of the ecosystem, right? All of the SOs and ACs – not all of them, but there's a large number of SOs and ACs that comprise that provisioning aspect of the ecosystem whereas RSSAC is the other half, the resolution, which enables that half. So without the root, the resolution of all the ccTLDs doesn't happen. So there's a relationship there and I think it's very important.
JOANNA KULESZA:	Thank you, Brad. I just wanted to say I share the emotion. I feel like we're breaking silos here so it's wonderful to have you guys.

What I think we might want to do is for Evin to read out the remote questions, all of them, and then we'll have the responses from you guys and then we'll reserve a few minutes for Alan. Thank you.

EVIN ERDOGDU: Thank you, Joanna. Reading on behalf of several remote participants. There are several questions and a couple comments so I'll go in chronological order. Alfredo Calderón asks to Brian, "Based on data collected, have any changes been done to enhance policy to better serve registrants?" And as a follow-up questions, he also asks, "As a relative newcomer to ICANN, how has At-Large contributed to serve as an Empowered Community to modify policy?"

Then moving on, we have a comment from Syed Iftikhar Shah. "There is a lack of capacity building on the ICANN matters in developing countries' stakeholders, particularly the end users and registrants. It is suggested that ICANN may work with relevant governments through the GAC for capacity building. It will help ICANN in the PDP processes and to avoid future associated risks."

Moving on to a question from Dave Kissoondoyal, "We can see from the map, the instances run by the operators including consortiums, universities, etc. but also run by ICANN as an

operator. Can we know out of the 1,000 instances, how many are run by ICANN as an operator?" and I believe they may have found the answer to the question in the chat.

Then Alfredo Calderón asks, "Why should I, as a registrant, even consider what to have? Why not just a Facebook page or use social media to do e-commerce and so forth?" and that's all. Thank you.

JOANNA KULESZA: Brilliant. Thank you. I'll leave it up to you guys to decide who wants to go first. Brian, go ahead.

BRIAN GUTTERMAN: Thank you for those questions and thanks for those participating remotely. We know it's not easy so I always like to recognize those participating online.

I will try to answer. I think the first question was around has the data collected impacted policymaking, policy updates? I want to say yes. In terms of what the registrant program, which sort of was started in ICANN, only a year and a half ago or so, has our unique data collected impacted policy yet? I'd probably say not yet. We do want it to. We want it to inform the community when thinking about policy changes. I would say in the past it has too. I think some of the data that compliance has provided, but also

the contracted parties too, has had an impact on policymaking depending on the stakeholder group and depending on how you read the data. So I think in the past, and maybe others who have been involved in policymaking for a long time, can speak a little bit to that and I think that was sort of his follow-on question about the impact that this sort of information has on policymaking. I think it was more of a comment but for example, the transfer policy is up for review and there is work going on within the Org and the contracted parties in particular, looking at the transfer policy, why transfers have been problematic for some and there is data that it will inform any updates that are made there. So that's one example, the transfer policy, which is an important policy for registrants, of course. So I think the answer is yes, but I'm not going to say that any of the data that we have collected recently has done anything impactful yet but we hope it does. So I don't know.

And then was there another question for me? Oh, about should people become registrants when they can just have a Facebook page. My answer there is we are not advocating at all to get a domain name or not. We are trying to educate and inform those who have registered for domain names, to help them manage those names. So it's not our role to tell somebody that they should have one or not, so I will stay away from that.

JOANNA KULESZA: Let me please just note that there is one more question I unfortunately missed. I'm going to sneak that in. I think it's going to Brad.

EVIN ERDOGDU: Thank you, Joanna. The last question is also from Dave Kissoondoyal. He says, "Question to Brian," but I think he means to Brad. "Do you anticipate any competition for the Root Server Operations in the short, medium and long term?" Thank you.

BRAD VERD: I'm happy to refer that to Brian if he wants it. The first question, I think they answered themselves. The number of instances run by ICANN as a root operator, again, I don't know that number off the top of my head. It's on the website. I'm going from memory. If you go to root-servers.org, scroll the bottom. Each of the letters, the identities A through M are listed. If you click on L, you'll see all the details around that so I don't have an answer to that.

Is there competition for the root? I think no. There's not competition but there are threats. And Fred, keep me honest here and chime in. But in order for the Internet to work like we're all used to it working or want it to work – maybe that's a far, I'm putting words in your mouth, but you need a single name space,

one name space. And as soon as you fracture that name space, you will have inconsistencies and incompatibilities. It's just going to happen.

So you have to have a single name space for the coherent systems to work and there are threats to that. There are lots of countries out there trying to do things on their own. They're building ripcord systems where they can pull away from the global Internet and do their own thing.

So yeah, there are a number of threats out there to that and it's a scary world, in my opinion, when you start fracturing the root system, and really, that's the wrong thing to say. You start fracturing the name space. Once you start doing that, it's a really slippery slope and we are doing everything to ensure that that doesn't happen. One of those things is the system has always been up so there isn't the need or the desire to go elsewhere because of availability or resiliency. Fred?

FRED BAKER: So one document you might find interesting to read on this is a document that was produced by the Internet Architecture Board in the year 2000, 19 years ago, general comments on the requirement for a unique root. Net is RFC2826, type that into your favorite browser and you'll find it. But yeah, as Brad says, the primary issue is the viability of the name space. Let's

imagine that I'm doing some banking with Alan and something bad happens in the routing of information between me and Alan, and all of a sudden, I'm talking with Holly. That might be a bad idea. And no offense, Holly, but it might be a bad idea.

And that's literally what would happen if we fractured the name space and so that's not a place we want to go.

JOANNA KULESZA: Thank you so much. Just a point of comment to all our remote participants. You're more than encouraged to pick these conversations up with our guests. All the e-mails have been shared. If there's a problem and you can't find it, just reach out to us. Our wonderful staff will certainly support you. I'm going to hand the floor to Alan. We have John's [hand] up. If you guys can share the remaining six minutes, you're more than welcome to do so. Alan, you are first.

ALAN GREENBERG: I won't take six minutes. When I put my card up, I had one thing. I now have four but they're all very quick. In regard to information for registrants, the first WHOIS Review team told ICANN, "Put some good documentation out there." The second RDS review team which is about to publish this report saying,

"You did a great job. Do better now." So we're going to keep going.

Number two, Eduardo asked a question that no one answered. He said, "Is it a PC?" and I think one of the fascinating parts of the Root Server System is it's a whole bunch of different pieces of hardware and different pieces of software, which means if someone finds a soft spot, a way to attack it, it's not going to hit the whole Root Server System and that's one of the real strengths of it. I'll turn it over to Brad.

BRAD VERD: Yeah, I'll just add diversity, diversity, diversity. Right? So it might be a PC as one might think about it as an intel-based machine. But these machines are running different operating systems, running different naming server software, running … Everything is different so that there isn't one thing or one compromise or one vulnerability. They can affect the whole system.

FRED BAKER: The third one is, Joanna said she's disappointed that the Root Server System hasn't gone down. That doesn't mean there haven't been enumerable problems getting to be enumerable attacks and very strong attacks. It's not magic and it's not luck. These people work really hard to make sure that they keep

ahead of the curve and that the system doesn't go down despite all these problems. And for that, I think we should all be very indebted.

My last point is a requirement on paper for being an ALAC member is knowledge of the DNS, general knowledge. I don't think everyone has that knowledge so I really would like to thank you for being here, helping to build up that knowledge and I hope under a new Intelligence Chair, we'll continue this and continue the process of both education and where we're going, but thank you very much for a marvelous session. Thank you.

JOANNA KULESZA: Thank you very much. I will leave place for applause. I'm just going to let John take up. I'm a clock watcher. You guys don't know me. I'm a clock watcher. I'm looking at the clock. We have four minutes. I know there are drinks coming afterwards. I'm going to stick to that. John, you have two and a half minutes and then we'll applaud the gentlemen for a minute and a half and we're done. Over to you.

JOHN LAPRISE: Thank you, Joanna. So at this point, it's not a question. It's a comment. But I believe you mentioned that in Montreal, you'll be presenting again or you'll be appearing again.

BRIAN GUTTERMAN: Yeah, we'll be presenting the RSSAC How It Works session on the Root Server System as part of the How It Works tutorial sessions. Yeah.

JOHN LAPRISE: Okay, excellent because at Montreal, At-Large will be hosting its ATLAS III and we would welcome a visit from you folks to present to our larger community who will be here, and as well, there is a North American School of Internet Governance that is happening immediately prior to ICANN and Montreal, and I think they would probably [cancel]. I won't speak for Glen, but I think that would also be a great opportunity to present to an interested community.

JOANNA KULESZA: Brilliant. Thank you so much. Again, to our remote participants, if you feel that your question was not addressed, please reach out to us or to our guests. We're happy to facilitate that capacity building effort. Please let me thank you guys for coming over here, explaining this to us in layman terms. I know there are

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many laymen and women who appreciate you doing this today and thank you for taking the time to chat with us and please, let's remain in touch. Join me in giving a hand to our guests today. Thank you. Thank you to our wonderful interpreters. Thank you to staff. I couldn't do it without you guys. Thank you, everyone. Off to reception. Thank you very much. Have a good evening.

HOLLY RAICHE: If I may, just for the joint APAC and APRALO networking event, if you could kindly go off to [inaudible], which is the hotel lobby, lower ground at the hotel lobby in the [Portopia], there's stairs down. Go down the stairs, turn left, and you will see the [inaudible] hall there. And if we could go as quickly as possible and to enjoy the joint APAC and APRALO networking event. We look forward to seeing you there and tomorrow morning at 8:30, our first session is the joint ALAC and Board meeting in [Portopia] Hall which is the main hall. So we look forward to seeing you there then at 8:30 tomorrow morning. Thank you.

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