KATHY SCHNITT: Thank you. And welcome to the SSAC evolution of the DNS resolution work party teleconference on Thursday the 1st of June 2023. All right, Barry, back over to you.

BARRY LEIBA: Well, so what I was going to say as an introductory thing is that our plan here is to focus on the whether the structure, the content of the document to the point structure is right and not try to pick out all the words right now. The focus of today is going to be on looking at the structure of the document, making sure that this is what we want and that the concepts that we're introducing are correct rather than that all of the text is exactly the way we want it right now.

RUSS HOUSLEY: Let me add to that, Barry, because I think you left out the motivation, which is. remember that we want to present a relatively fleshed out idea of where we're going at ICANN77 in just a couple weeks. So basically, we want to make sure at the structure is right today, and then Andrew will make a pass at that, and we can work on the content of each of paragraphs next week with the get it close enough to share with the rest of SSAC mentality. So that's what we're to focus on today, and I hope you could see why.

BARRY LEIBA: And so, Russ, carry on.

RUSS HOUSLEY: Okay. So for that reason, we asked Andrew to start with the table of contents, and so that's what's up. When we were looking at this earlier, we noted that some text that got moved to the parking lot is pretty fundamental to the message we're trying to convey here, and so we think some of that parking lot text needs to be pulled into a section after definitions and before section 3. And that is we agreed very early on in this work party that the domain name syntax has become pervasive because so much software uses names of that form. And that's why so many of these alternates continue to use that syntax. But somehow, that text that explained all that got moved to a parking lot.

So we think that needs to be said early on. And so that's why now in the outline, he has added motivations to use the domain name syntax, but you'll see that there's nothing there, because it all got moved to the parking lot and at some point on our work. So assuming he could just pull that back together and put it in a way that flows well, which I think we could leave to Andrew to do just fine. But other than that, we'd like to talk about whether this structure makes sense, and if not what we need to do to approve it.

GEOFF HUSTON: This is Geoff. I actually like the way this is kind of heading. I think 9 and 10 are going to be challenging, but I like the way it's heading. I like splitting out the issue that if we're talking about evolution of name resolution, we're actually not talking about evolution of syntax. And this section 3 that goes there's very little in the right in the way of

evolution of syntax other than some proposals to flatten it. Predominantly because it's just a highly accepted and commonly accepted naming form. The point that I was trying to get to at some level further down, section 4, now talks about motivations for why there's pressures for change.

I'm not sure about section 5 to tell you the truth, and maybe that comes in a bit later. Section 6 talks about some examples of evolutionary change. And I haven't gone through it in detail, but I'd certainly like to see some reference back to the motivations. The reason why we picked this as an example is because... Right? And then you get down into the underlying tensions, and this is where the remainder of the document starts to get fuzzy. On the whole in an unmanaged system, which the DNS largely is, it's acceptance and consensus within community of users that determines what things succeed and what things just slowly die. It's like all the rest of the internet no one's in charge popularity of use determines common acceptance.

Except that, this underlying tension which we touch upon in no space coordination and where we also touch upon in section 9, the DNS is not tolerant. And in fact, the naming system is not tolerant of ambiguous or uncertain or indeterminate mechanisms. And it's one of the few areas where the rigidity of the underlying system doesn't readily accommodate vastly different alternatives. And it's that tension between some folk wanted to change but the system itself is severely resistant to various forms of change, which is where we are today. And I'm not sure there are answers here. The reserving of play pens through the naming system which I think was section 5, the dot alternates family, is one way of, here it is. Section 5, I think, comes later. It's kind

of this how do you compromise between this thing needs to be deterministic. It needs to be rigid versus I want to play, I want to experiment, I want to push the boundary.

On the whole, I like the idea, I just think maybe if you put fire further down, you talk about the problem space and then the difficulties and challenges in trying to meet all demands simultaneously, and that's a real problem. Those are my comments. On the whole, I like it.

ANDREW MCCONACHIE: I think I agree with you, Geoff. I think section 5 right now is out of place. I still have some work I need to do in section 6 to put some more meat on that. But I think we could put 5 between 8 and 9 or maybe even between 9 and 10. And to be honest, I'm not even really sure if we need 10. Right now 10 is empty. And I don't know if we're really going to be able to come up with a summary outside of the findings. So we may end up just dropping 10. But those are my thoughts looking at the table of contents.

RUSS HOUSLEY: Just to build on that a little. When we were talking about all the animals in the zoo, I don't know, last time, time before, we don't want to explain every animal. We only explain some of them and why they meet the motivations. And so I think we were already moving in the direction Geoff was talking about.

GEOFF HUSTON: Yeah, exactly. And it's kind of in section 4 you've actually got a reasonable list of why there are pressures to move the Internet or sorry, you move the naming system in this direction or that direction, unstoppable domain names, no external dependencies, blah blah blah. And then in this taxonomy, sorry, in this list in section 6, the animals in the zoo, it's kind of useful to point out what Tor was about, which is actually this no extraneous information, the limitation of broadcasting what you're doing to wayward strangers. The reason why, particularly unstoppable domain names, etc., it's not unstoppable per se. There are many things when I'm doing that. But it's more this name has persistence without any intermediary being able to pull it down.

RUSS HOUSLEY: Okay. Is that enough update of where we're going? And I think based on the feedback we've given Andrew, he'll have some updates one week from today that we can take a look at with text. All right.

ANDREW MCCONACHIE: Can I ask a question, Russ? Do we want to move section 5 further down?

GEOFF HUSTON: Well, I would argue in favor.

RUSS HOUSLEY: I would say the list needs to go down past 7.

ANDREW MCCONACHIE: Okay. I think I'll put it in then between 9 and 10. Or what did I say? Between 8 and 9. That's what I said.

RUSS HOUSLEY: Does anyone think that's wrong?

GEOFF HUSTON: Actually, I think it comes after 9. I think the first sort of blocking which is motivations and examination of alternatives is actually all about the pressures to evolve. Then 7 and potentially 8. Now, I think 8 goes off track personally. But 7 talks about these constraints in evolution that the DNS is not unconstrained. There are really big constraints about how much you can evolve before you start disturbing the integrity of the name system and things go haywire. And then you can talk about, well, how do we try and address this? And that's where section 5 comes in going, well, if you're prepared to CORREL in the existing namespace, these are the approaches that will do that sign of penning as in fencing around areas where it's a different world beware.

And then I think there's a more general discussion after that that talks about in an uncoordinated or loosely coordinated system, which has very strict constraints, what other mechanisms allow evolution? And to my mind, that's an open question. We just don't know. We honestly don't have a clue on how to meet that breadth of requirement of, yeah, do what you want, but the name system has to work for everyone. Probably, I'll argue 5 comes behind 9, really.

RUSS HOUSLEY: Interesting, Geoff, that you're actually saying that that is going to lead for a conclusion that there's further study at some point in the future when we know more.

GEOFF HUSTON: Yes.

RUSS HOUSLEY: Right?

GEOFF HUSTON: You're right. Screw that.

RUSS HOUSLEY: Okay. That's what I thought you were saying. I just wanted to make it concrete to make sure. Any other questions, Andrew, or anyone else?

ANDREW MCCONACHIE: None for me.

RUSS HOUSLEY: Okay. So let's go to section 3.

ANDREW MCCONACHIE: The new section 3 or the old section 3?

RUSS HOUSLEY: Sorry. The old section 3.

ANDREW MCCONACHIE: That's what I thought. I just wanted to be clear. All right. There we go.

RUSS HOUSLEY: Okay. So this is where we got really bogged down last time we got a call, which was two weeks ago. So, maybe Andrew you could start by explaining what the bog downness was.

ANDREW MCCONACHIE: Oh, yeah. Well, the bogged downness was this first paragraph here. I don't know if we need to really revisit it. But one thing we did think about on our admin call was to change the word evolve to the word change. How do people feel about that change of title? Or I could say the evolution of the title.

RUSS HOUSLEY: Yeah. The thinking was some of the things we're saying are about why things are staying the same, and some of it is why there's pressures to move in other direction. But does that help with how we got bogged down on paragraph one?

ANDREW MCCONACHIE: No. I just want to resolve it if nobody has any issue with it.

RUSS HOUSLEY: Okay.

ANDREW MCCONACHIE: So I think we got bogged down on paragraph one was arguing over whether or not these memory and processing constraints of holding the entire namespace in a single authoritative server were still existent or not. But I think we're mostly done with that conversation.

RUSS HOUSLEY: I hope so. I think we came up with a way to say what needed said without saying anything about the state of computing.

ANDREW MCCONACHIE: Right. And then I don't think we addressed your comment here, Russ. Do you want to speak about that?

RUSS HOUSLEY: My point was that the hierarchy also made it possible to do delegation of administration. And so that was a scaling aspect of the hierarchy, which when host dot text was managed in one place, everybody has to reach out to that one person who was running VI or emacs, we can go down that route, to edit the host dot text. So I was just thinking not only did it have to do with the constraints of computing, it had to do with easing the burden on a central administrator.

ANDREW MCCONACHIE: We get into that in the third paragraph. Is it okay if we leave it until the third paragraph?

GEOFF HUSTON: Well, why don't you swap 2 and 3, Andrew, and pull it. So you pull the thought together about the advantages of hierarchy, and then the implications follow.

ANDREW MCCONACHIE: I like it.

RUSS HOUSLEY: Yeah, pretty good. All right. Cool. That certainly solves my concern.

ANDREW MCCONACHIE: I just have to read it now to make sure it still works. Yeah. You got rid of also here and then add another here. Yeah, that's better.

GEOFF HUSTON: Yeah. Fair enough.

ANDREW MCCONACHIE: You'd use the word structure here, Geoff. And I was wondering if we could just say namespace, but I didn't want to just put namespace because I figured you chose the word structure for an important reason.

GEOFF HUSTON: I did because I was trying to think of the framework where you split out authoritative servers, that they were authoritative for a small part of the space, and those servers were organized hierarchically precisely aligned to the namespace. But that's why I use structure. I was thinking about the servers, not the name.

ANDREW MCCONACHIE: Like, the resolution process being struck like that.

GEOFF HUSTON: And maybe there's a small missing sentence here. And in essence, it's not actually. I'm quickly scanning the previous two paragraphs. You see, I suppose I just assumed the implication of a hierarchical namespace- and, in fact, the divided namespace, it doesn't necessarily have to be a hierarchical- is that you can create a set of authoritative name servers, each of which are authoritative for their subset of the namespace. And if the namespace is hierarchically organized, those servers can also be hierarchically organized.

Now I just assumed that in the text when I drafted it by the look of it. Yeah, I did. That's why you are kind of stumbling, is it space or structure? And the answer was, well, it started as space, but in essence, the hierarchy, the division of the namespace allows division of authoritative servers such that no single server needs to be responsible for the entire space. And that's actually the first sentence, Andrew, not the second.

RUSS HOUSLEY: Actually, I wonder if that's not an implication above just like the hierarchical namespace led to distributed management. It also enables the ability to divide their workload across multiple servers.

GEOFF HUSTON: True. True.

RUSS HOUSLEY: So it's a third implication. Yeah, it's actually you actually already says that in the middle paragraph and now it's the second paragraph. Different administrators using different servers. So it's fine. I just didn't remember it was embedded in there.

ANDREW MCCONACHIE: You're right. Yeah, we do go into the resolution in the second paragraph now.

GEOFF HUSTON: In that case we don't need the opening paragraph.

ANDREW MCCONACHIE: You mean the opening sentence here?

GEOFF HUSTON: Yes. We can go back of the word hierarchical name, or hierarchical, what is it name structure?

ANDREW MCCONACHIE: That's what was originally there. Yeah.

GEOFF HUSTON: Oh, hierarchically organized server structure.

ANDREW MCCONACHIE: That's better.

GEOFF HUSTON: Or hierarchically organized name server structure. Because the previous paragraph used name server as one word. Yeah.

ANDREW MCCONACHIE: Okay. We're basically still in past tense as well on the first three paragraphs until we get to the fourth paragraph, which works. So we're not. Like, we're not switching tense or something. Okay. So this, I thought because the word motivate or motivations was in the title, we should be really careful about using that word. So I thought allowed was a better word here, but unless we really do want to say this was a motivator.

GEOFF HUSTON: Oh, in my mind, they serve the same purpose and if you want to use allowed, that's fine.

RUSS HOUSLEY: Okay. I'm moving pretty quickly. If anyone has any comments, please say something.

GEOFF HUSTON: They don't necessarily have to be new entrants, do they?

ANDREW MCCONACHIE: It's about a new entrance to experience with. That's true. They could be the same old entrance doing something new.

GEOFF HUSTON: Yes. This is allowed experimentation.

ANDREW MCCONACHIE: Exactly. Well, now we kind of do want something like, but now it is kind of weird, I think, with allowed. Sorry. I shouldn't fiddle with it anymore. What is my problem with this paragraph?

GEOFF HUSTON: But now we get into the bullet list of motivations. So that paragraph, time. Next paragraph, privacy. You know, it's just the list of motivations where the single word is replaced with a number of sentences.

ANDREW MCCONACHIE: I'm using the word programs in we've allowed the next paragraph in an odd way. Is there a better word than programs? Because it's not a computer program, it's something else.

ANDREW MCCONACHIE: This word, programs?

GEOFF HUSTON: Yes.

ANDREW MCCONACHIE: Program. Ah, yes. Well, I want to say businesses, but that's not right. Exposure of programs. So just see. What is being--?

GEOFF HUSTON: Oddly enough collecting the data has been going on forever, and it was sort of we conveniently ignored it until it was shoved under our nose. Oh, that's bad.

MERIKE KAEO: Is this just the exposure of data collection?

GEOFF HUSTON: Well, looking backwards, Kaeo, that's exactly what seemed to be the issue. It wasn't that we didn't know it was happening we did, but when it was brought out into the open, we thought, oh, that's a bit smelly. That shouldn't be right. And it was the explosion that made us think about it harder. It's a subtle point. I'm like, if there's another way of saying it.

MERIKE KAEO: Oh, no. I do see what you mean. It was attention on it that wasn't. It was a new behavior. It was the attention on the behavior.

GEOFF HUSTON: Yeah.

ANDREW MCCONACHIE: What we want to say is that people care about privacy now, and that motivated changes in the DNS.

GEOFF HUSTON: Yes.

ANDREW MCCONACHIE: The increased attention. We've also seen the increased attention to privacy and concern. Go ahead.

MERIKE KAEO: I mean awareness comes in sometimes. I don't know if that's the right.

BARRY LEIBA: I think attention work, or awareness. They both work. Yeah, let's go with awareness.

ANDREW MCCONACHIE: Awareness of privacy concerns, consideration?

BARRY LEIBA: Yeah, privacy considerations.

ANDREW MCCONACHIE: That data collection.

GEOFF HUSTON: It's hard to do this in a kind of a group context here, Andrew.

ANDREW MCCONACHIE: I know.

GEOFF HUSTON: I think what you're trying or we're all trying to say is in recent years, there's been an increase awareness of privacy considerations for users, full stop. This has affected or impacted or something, the DNS as well as many other application spaces as well as many other applications. You see, its generally would be more aware of our privacy. The DNS is part of that awareness, is the next sentence. It it's not immune from this. And then it leads into the response to this form of DNS data collection.

ANDREW MCCONACHIE: This says, or we can say motivated again. This is motivated changes to the DNS protocol.

GEOFF HUSTON: DNS resolution protocol.

RUSS HOUSLEY: Do you consider do and dot changes to the DNS resolution protocol?

BARRY LEIBA: It’s an interesting question because--

GEOFF HUSTON: Yeah, it's kind of is UDP and PCP and—

RUSS HOUSLEY: Right. So, I mean, changes to the way the DNS resolution protocol is used, sure, but to the protocol itself?

ANDREW MCCONACHIE: Well, how about changes--?

GEOFF HUSTON: Well, there have been few name minimization. So it’s not just--

RUSS HOUSLEY: That's true. Minimization is good example.

BARRY LEIBA: That's also mostly a change to how it's used.

WARREN KUMARI: Yeah. That's an aggressive NSEC. I mean, I think both of those are changes to the resolution protocol. I don't think do and dot, those are just different transports.

BARRY LEIBA: So why don't we say changes to the protocol and how it's used, put them both in?

RUSS HOUSLEY: Yeah. That's even better.

ANDREW MCCONACHIE: Sure. And then we can put like five footnotes here with all of these in work.

RUSS HOUSLEY: Just in case you didn't think we knew what we were talking.

ANDREW MCCONACHIE: Well, one of those footnotes is going to be the SSAC 109, obviously. And I don't know if we need anything. I don't know if we need this. And then this sentence still says what the sentence before it says, even though we—

GEOFF HUSTON: Less susceptible to opportunistic eavesdropping is the bit because this has motivated changes, unspecified. And so we need to kind of say, well, these changes have been-- you're trying to make me wordsmith on the fly and my brain isn't caffeinated.

MERIKE KAEO: Did audio just stop?

GEOFF HUSTON: No. It's everyone's in wordsmith, I think Warren.

WARREN KUMARI: Not used to people not having more comments.

BARRY LEIBA: Which means at some level, yes, audio did stop but not for technical reasons.

ANDREW MCCONACHIE: So how do we feel about this sentence? I don't hear anyone complaining about it, which is always good.

RUSS HOUSLEY: I think it's fine.

ANDREW MCCONACHIE: Perfect. Okay. That's our paragraph on privacy.

RUSS HOUSLEY: GDPR compliant.

ANDREW MCCONACHIE: Well, if we're really concerned about the GDPR, we delete the whole paragraph. Just kidding. So moving on to the next two paragraphs, any comments here?

GEOFF HUSTON: Well, that final paragraph becomes a summary of the previous three. It's say simply before it was a scaling issue, we're now talking about speed, privacy, and authenticity.

ANDREW MCCONACHIE: Is this a nod to DNSSEC?

GEOFF HUSTON: Yeah.

ANDREW MCCONACHIE: Okay. So this is the DNSSEC paragraph here.

GEOFF HUSTON: Yeah. DNS script, DNS curve and DNSSEC. It's just all of the above.

ANDREW MCCONACHIE: Should I find a footnote for DNS curve?

GEOFF HUSTON: Well, yeah, why not. I think Open DNS is still using it. You know Warren?

WARREN KUMARI: I'm not sure if I muted. Nope, I'm not muted. Nope, I don't believe anybody is using it. I think it was one of those it seemed like a really cool idea, but it never really got deployed as far as I know. I mean, I got used a little bit, but I believe it has died out. But other people can tell me I'm wrong, but as far as I know it was--

GEOFF HUSTON: The only reference I saw of its use was in conjunction with open DNS.

WARREN KUMARI: And a bunch of people do think it's a substantially better thing than DNSSEC. But, yeah, I believe that Open DNS did it for a little bit, and DNS script was released, but I don't think anybody have actually used it other than a few people sort of playing with it. Oh, Thomas Patek, whatever his name is, I think [CROSSTALK] for a bit.

ANDREW MCCONACHIE: Patataek.

WARREN KUMARI: Pardon?

ANDREW MCCONACHIE: Patatek. Yeah, he's got a last name.

WARREN KUMARI: You got t better.

WARREN KUMARI: Patatek. Okay. Yeah, I think that was all.

ANDREW MCCONACHIE: Okay, well I'll just add some footnotes for DNSSEC there. Moving on to this paragraph, I think I kind of understood where this paragraph was going, but I wasn't really sure.

GEOFF HUSTON: We think ICANN is evil. We want to experiment with the naming structure that doesn't have an evil monopolist in the middle.

ANDREW MCCONACHIE: Is it that or is it there's people who have seats at ICANN, and we want to create a new set of seats, and then have us sit in them. We don't like the people that are currently sitting in the seats, so we're going to make new seats and sit in them ourselves.

GEOFF HUSTON: Well, I think there's several sides of the same discontent with the existing. You know, it's not technical was the reason why it sort of called out this way. It's sort of those were changes around the technical behavior of the DNS, draw a line, but that's not all. The way we organize the naming system (ICANN) isn't universally appreciated. And as you say, is it more seats, a different room with different seats? Who knows? But it's just something that isn't the current ICANN structure at the top.

ANDREW MCCONACHIE: All right. I can change that paragraph to say that. It does mostly say that, but I was worried when I was editing I was like messing it up. But now I know what the intention was, so I can fix it. And then this very old comment where you still have to kind of tease out the immutability of blockchains. We can maybe leave that one for another time. But this is an old paragraph. This has been in the text for a while.

GEOFF HUSTON: Well, I think it confuses. Because, yeah, this is an old paragraph. I think it confuses motivation with solution, and then it criticizes the solution. I mean, some folk want the system names that cannot be disrupted by third parties. And in some ways, that's probably enough. And you can take the blockchain technology problems. Right? And it becomes a cometary all the way down when you talk about Ethereum, is it? Or one of the others that are just straight up blockchain based naming systems, and their continual bloating problem. But the motivation is censorship

resistance. And a motivating factor for an alternate naming system and its resolution is to resist or, what the word is? It's to make the name permanent. You can't make it go away. And the fact that we're using blockchain doesn't really matter.

ANDREW MCCONACHIE: So basically it's immutable, but you can just add to it. I mean, that is my understanding of blockchains, but then we went down this rabbit hole. Well, some blockchains you actually can change there. So I like where you're going with this. You just make it as a motivation. We don't bring in the actual solution, so I don't have to actually research the difficulties of talking about mutability and blockchains.

GEOFF HUSTON: Right. So there is a desire by some to experiment with name systems that have inherent permanence.

ANDREW MCCONACHIE: And I wouldn't use the word permanent, and not the word, I won't talk about mutability because that sounds okay.

GEOFF HUSTON: Yeah, right.

ANDREW MCCONACHIE: It's not the audience.

MERIKE KAEO: Yeah, I think that works better, Andrew.

ANDREW MCCONACHIE: Well, moving on to this paragraph. And then, Russ, your question should this be an or.

RUSS HOUSLEY: Yeah. It's changes to the DNS, or it's a resolution protocol. As we saw above, some changes were on the DNS resolution protocol and some were how it's used.

BARRY LEIBA: Well, and the dessert topping.

ANDREW MCCONACHIE: And then so the final sentence, this resistance to change is generally commensurate with the size of the installed based and the scope and intensity of the change being contemplated.

RUSS HOUSLEY: I don't know what intensity means, sir.

ANDREW MCCONACHIE: Yeah. There's an intensity of change.

RUSS HOUSLEY: Why did I say that?

ANDREW MCCONACHIE: I kind of know what you mean.

RUSS HOUSLEY: Oh, I've got to change the resolution protocol. I've got to change the naming structure. I've got to change the resource record types. Now I've just got to change the entire DNS [00:44:20 –crosstalk]. Well, that's all the scope. That's fine.

MERIKE KAEO: Complexity? Is it complexity?

GEOFF HUSTON: Well, yeah. Yeah. That's another word. Yes, complexity.

ANDREW MCCONACHIE: Complexity is a cost.

GEOFF HUSTON: I think it's why NSEC 5 will never ever see the light of day.

WARREN KUMARI: Also solves a problem that doesn't exist. If any, but other than sharing a new one, how it worked, yes.

GEOFF HUSTON: You've never tried to do that Warren.

WARREN KUMARI: Yeah, but at least tonight were funny. Hammer anyone?

ANDREW MCCONACHIE: Sure. This is just talking about how when things are deployed, they're hard to change. And moving on to this innovation requires differentiation. Russ, you have this comment here. Users need to perceive some kind of improvement to the DNS, whether it be technical or governance.

RUSS HOUSLEY: Well, that's the differentiation. Right? They have to perceive a difference even if it isn't real.

ANDREW MCCONACHIE: Yeah, that's slightly different than what we say now. So it should be users. But is it users or is it like—

RUSS HOUSLEY: Well, yeah, or is it software?

WARREN KUMARI: Yeah. See, that's what I said when Russ made that comment initially. We got to be careful what users means.

RUSS HOUSLEY: Yeah. How about people need to perceive? Because they're the actors in whether they be the ones who choose to use Tor or not or the people who choose to build a particular resolution system into their favorite social media app.

GEOFF HUSTON: I kind of wonder if we're overcomplicating a simple proposition.

RUSS HOUSLEY: Could be. It could be the first time.

GEOFF HUSTON: Right. And you're trying to say there's a cost benefit issue flying around. There needs to be a benefit. And you are kind of then aiming at going, the benefit can either be real or it can be a perception of benefit. And you're heading down that path. And I'm not sure that's, I would say you're trying to make a very subtle point and this paragraph was a bit blunt or at least this section is a bit blunder than that.

The whole issue is I thought, you can't just say, I've colored it purple, isn't it right? You've got to say, well, it's great because. And if all you've done is change the color, it just doesn't matter. Now, you can try and

run a marketing campaign, purple is more climatically friendly, whatever. And you might get there on perceptions. But in some way, you need to provide something or it's not going to fly is still the case, isn't it? And I would actually say because users is so amorphic, the people who write the software, it needs to provide a capability or attribute to the DNS that is not already provided or not already catered for. You know, it needs to be different, is all that needs to be said.

ANDREW MCCONACHIE: Maybe it provides a perception of difference.

GEOFF HUSTON: Well, again, you're being too subtle. Sometimes really issue is it needs to be different, or if you can't do that… try selling it as a difference anyway.

RUSS HOUSLEY: Actually, I think we should delete the last sentence. The first sentence already says what Geoff just said.

ANDREW MCCONACHIE: So just kill the last sentence? This one?

RUSS HOUSLEY: Oh, that's good. Yes.

ANDREW MCCONACHIE: Yeah, that's true. This sentence immediately before already says that.

RUSS HOUSLEY: It's already said two different ways above.

ANDREW MCCONACHIE: All right. We were talking about adding another section or another paragraph here based on Geoff's comment. I really like the way these last 3 paragraphs flow together. So if we do want to talk about that, I'd prefer to talk about it somewhere else.

GEOFF HUSTON: True. It was put there as kind of should we talk about this and the answer is, well, maybe not. I just wanted to get over the fact, and we kind of in reading it again, excuse me, we've fallen into the trap of looking at this the way we've always looked at it. Names exist in some permanent state out there, and we're just querying them. And there is an evolutionary line of thought that goes names are pieces of microcode. They only exist when you execute them. When you don't bother, they're not there. And in essence, what you're doing is instructing a server to perform a particular task when you give it a query for that name.

Now, that's pretty abstract and goes sort of way beyond what we've talked about so far. But it is an emerging piece of the puzzle with all of these cryptographically generated names and names with hidden purposes and names with encoded fields, etc. There was a wonderful one where they encrypted the name inside the name. It was the first

version of obscure, of obfuscated DNS. Right? Remember that one? Where you send some crypto text to odns.com, and the odns.com server unlocks the crypto and sends its own query of the domain name. That was what I was trying to sort of bring out and this place is not the right place, Andrew. You're right. And I suppose, I'd be interested if others even think that line of thinking is worth putting here, or is it way to obtuse and abstract.

ANDREW MCCONACHIE: I think it's an important concept. I just think that given the level of this document, we may actually need a new section to talk about it. Because it's pretty abstract and pretty weird. But it is something that's happening a fair bit, so maybe it's worth discussing.

RUSS HOUSLEY: It's creating a new intermediary though. Right?

GEOFF HUSTON: Well, in some ways, Russ, you're right. It does create a new intermediary, but the intermediary is the entire DNS as we knew it. You are kind of using it for a client to get a server to do something and you're using the DNS now as the mechanism where you make that happen.

RUSS HOUSLEY: It's just weird. And from the client of, not of the client of DNS, but the real client perspective, do they even know?

GEOFF HUSTON: Yeah, it's kind of a very abstract form of tunneling because the DNS goes everywhere.

RUSS HOUSLEY: Because no one dares block 453.

GEOFF HUSTON: If it goes anywhere, Andrew, I don't think it needs its own section. It's giving it too much emphasis to what is just a possible area.

RUSS HOUSLEY: It's an animal in the zoo, I think you're saying.

GEOFF HUSTON: It's an animal in the zoo.

ANDREW MCCONACHIE: So we need we need to we need to find an animal then that experiences this behavior, and then we can call out this behavior as how it's different from the DNS. What is the right animal that we should include in the zoo to highlight this behavior? Silence.

RUSS HOUSLEY: Yeah, that’s a little harder.

ANDREW MCCONACHIE: But do we have an example that we could add.

GEOFF HUSTON: The only example that I could put on, and it never really got out of the lab was the trial of oblivious DNS as implemented in DNS labels. I've forgotten who did the presentation, but it's almost hardly worth mentioning. If you want, I could take a crack, a more general paragraph, hidden. I'll make a proposal in the text.

WARREN KUMARI: Apologies, I got sucked into dealing with the outage and fixing something. But what exactly is it that we're talking about. I don't even know where in the document it is, but I think I might have an example of—

GEOFF HUSTON: Go back up again. I just added some text there, Andrew. Yeah, the permanence of DNS labels, what if they weren't?

ANDREW MCCONACHIE: Well, is this, like, all this white lies, black lies stuff?

GEOFF HUSTON: No.

WARREN KUMARI: So that example is what's this case, [00:55:32-inaudible]? I think this might be a reasonable example. He had a thing where he'd implemented a reverse Polish notation calculator that you drove through DNS queries. Right? Which seems kind of similar to sounds similar too.

RUSS HOUSLEY: Sound like a problem that we don't have.

WARREN KUMARI: Yeah. I mean, the problem that he didn't have there was he wanted to do something funny and this seemed like a good giggle. But you could send at things like 2.2.plus.rpnkelp.example.com, and it would return the answer in a text record for you. Right? So I think that that's what we're talking about here. We're using DNS labels for something else. But maybe I'm completely misunderstanding what Geoff is meaning by the permanence of DNS labels.

ANDREW MCCONACHIE: You're almost like using DNS as a kind of internet based state machine.

WARREN KUMARI: Yeah. I mean, a bunch of people have tried various weirdnesses with things like that. Like, for example, Facebook for a while was encoding the users' account info into the DNS lookup to do load balancing based on that, which is kind of similar, but the name or the address of wkumari.account.facebook.com or whenever they actually encoded it

as wasn't really a DNS label. It was other identifier or type label. Probably not a great example. But yeah, are a bunch of similar. Let me see if the reverse polish notation DNS things still exist. And I mean, another thing I guess for non-permanent DNS names is Geoff's crazy ad based stuff.

GEOFF HUSTON: Yeah, I'm happy to sort of take an action to fill that out with some text to look at the next time. I just wanted, I suppose, to challenge these motivations, and one of them is to break out of the existing assumptions around the DNS of the permanence of DNS labels. And the assumption that the DNS is merely a massively distributed database lookup, and talk about there is some emerging they could not even emerging. There have been some thoughts around what if. Yeah.

WARREN KUMARI: Here we go. I knew there was one. So if you do that, you get back to the Wikipedia page. Unfortunately, Bert's thing doesn't read. It has reversed Polish notation calculator no longer really exists. But, I mean, here's an example of, I think, what we were talking about, right? Actually, I guess I'll just copy and paste it because not everybody is on a device that has an easy command line.

ANDREW MCCONACHIE: It reminds me of someone storing a function inside of a MySQL table or something, and then just querying the table and getting the function and then having that function get executed.

GEOFF HUSTON: Yes. As I suppose my point is, that almost all of the thinking around the DNS is actually being on a simple look up. The label is this sort of permanent thing, and the queries, the queries, all that label. And there's always been this underground thought that why do they need to be permanent?

WARREN KUMARI: The thing I was like, yes, we can talk about this. I'm just concerned that we're now encouraging that sort of thing. And I seem to remember somebody making a t-shirt or a cup saying something along the lines of rough consensus and running code? Fuck that, just put it in the DNS. No idea of who could have made that t-shirt.

GEOFF HUSTON: I wonder who would have done t-shirt.

WARREN KUMARI: But I mean, let's not give people ideas.

RUSS HOUSLEY: I think they've already had those ideas because I think DNS Tumbling fits into this good conversation great place nicely.

GEOFF HUSTON: I think there's a motivation for change. There's a motivation for change. Motivation around this issue of what if labels weren't permanent. And it sort of expresses itself in many, many ways, and we see that in wild cards at the moment. But what if it was more than that? What if those wild cards excited or see if the values that were matched against the wild card, then excited a response as if it was not a wild card. It wasn't the same response for every query. So it's kind of customized queries and customized answers.

And all I wanted to do rather than fill it up with examples is just talk about some of these motivations challenge our various assumptions about DNS, in terms of the permanence of labels. And there are experiments around extending the wild card model of the DNS such that the query itself has some relationship to the response that's given, and that relationship is determined by the server, not by the database. This is my rough idea of what text to say.

WARREN KUMARI: Oh, look that Wikipedia query there. That's just brilliant.

ANDREW MCCONACHIE: Well, we are five minutes over. So, I have some homework. Geoff, it sounds like you have a little bit of homework. Let's meet again next week. Berry, Russ, do you guys have anything to say before we close it off?

BARRY LEIBA: Nothing from me.

RUSS HOUSLEY: Yeah, well, I'm good too. And thank you. I think this was one of our more productive sessions.

WARREN KUMARI: That's because Warren was sidetracked into, like, fixing stuff instead of randomly fighting with Geoff. But luckily Warren's going to be away at another conference next week, and so you'll have another productive meeting.

GEOFF HUSTON: That's not true, Warren.

WARREN KUMARI: You won't have a productive meeting? You're probably right. Bye all.

GEOFF HUSTON: Thank you all.

RUSS HOUSLEY: Thanks. See you.

MERIKE KAEO: Thanks. Bye.

[END OF TRANSCRIPTION]