KATHY SCHNITT: Welcome to the Evolution of the DNS Resolution Work Party teleconference on Thursday, the 8th of September 2022. Barry, I'll hand it back over to you.

BARRY LEIBA: Thanks, Kathy. So last week, we synced our definitions up with RFC-8499 and simplified our list of definitions a bit. And I think we're done with the definitions, but I wanted to start this meeting by having us look at the definition section and seeing if we're all happy with where we are. So does anybody have anything to say about the definition section which is up on the screen and for which we just got a link in the chat?

ANDREW MCCONACHIE: So I added that text that was like three sentences at the top there.

BARRY LEIBA: Yes. Which I think is perfect.

ANDREW MCCONACHIE: Okay.

SUZANNE WOOLF: Yeah. I added one suggestion modification that I'm not hard over on. This is getting pretty good. The names-based definition specifies it's a set of names and I was thinking a set of related names or names of

some common syntax just to convey the idea that a namespace is a coherent object of some kind. I don't think we'd call an arbitrary collection of things that look like domain names and namespace, but if that's an opinion others do not share, I will certainly live with it.

BARRY LEIBA: Yeah. Related in certain ways, but not necessarily related in other ways. So it's maybe --

SUZANNE WOOLF: Well, related in some way, even if unrelated in any other way, but that's fine.

GEOFF HUSTON: I think you're putting too much into what this is. I'm like, dog, cat and fish is a namespace.

SUZANNE WOOLF: Okay. That I'm not sure I agree with, but I will defer.

GEOFF HUSTON: I think in the abstract sense it's a namespace.

SUZANNE WOOLF: Yeah, they're all words in the same language, so to speak.

GEOFF HUSTON: Well, even if they weren't, I don’t like that.

BARRY LEIBA: Okay, I think Geoff's taking us into set theory.

GEOFF HUSTON: Yeah. I have because namespace and set theory are isomorphic. It's the same kind of crap.

BARRY LEIBA: We're not defining namespace in a general sense. We're defining namespace in a domain name sense.

SUZANNE WOOLF: I withdraw the comment. Do I have to actually cancel it myself?

BARRY LEIBA: No.

GEOFF HUSTON: I think it's more important. More important is the back end used to identify and refer to objects. That's the real defining characteristic here. Not, like I said, dog, cat, and fish.

SUZANNE WOOLF: Okay. Fair enough.

GEOFF HUSTON: Okay.

SUZANNE WOOLF: Like I said, it was a tentative suggestion, which I am not in love with.

BARRY LEIBA: Well, thanks for making it and then withdrawing, and whatever. Okay, so we are all good with using the base terminology in 8499 defining a few more terms, and we don't see any big problems with the terms we're defining. That's a big question. We're all good with that?

ANDREW MCCONACHIE: I have a question about name provisioning because it looks like there's two definitions down there for name provisioning. And I mean, to me these read like two separate definitions and should we delete one? Or is this bottom text here just part of this top text?

RUSS HOUSLEY: I thought the bottom text was put in as we were talking about something and then it just remained there after we were through editing the top, and it should go.

BARRY LEIBA: Yeah, that's what I think too.

ANDREW MCCONACHIE: Okay, well, that's easy.

RUSS HOUSLEY: That's my memory. We'll find out if I'm right.

BARRY LEIBA: Yeah. If Jim screams that we missed a point that he was making, we can always adjust it.

ANDREW MCCONACHIE: So that's everything right there.

BARRY LEIBA: Good. I like that that it's brief. Okay, so it sounds like we're good on the definition section. And the next thing to do is for us to head over to section 6. And look at what Andrew -- so Geoff --

GEOFF HUSTON: Well, 2.1 examples. I would like to see _printer.local added or _example.com. I really don't care. Because is it a leading underscore domain name and a DNS name or not?

BARRY LEIBA: Well, what is your opinion, Geoff, on where those check marks should go?

GEOFF HUSTON: Wow. Now --

RUSS HOUSLEY: _printer.locals there, right?

GEOFF HUSTON: What we just edited.

RUSS HOUSLEY: You just typed it, all right. He's so fast.

GEOFF HUSTON: He's so fast. And I am pretty sure it's a domain name, but not a DNS name. But it all depends on a strict interpretation of what we call host names and what we call DNS names. Because there is this --

RUSS HOUSLEY: I think that's right for .local because it's not in the DNS, but one that is _TCP. ARPA or something like the arguable.

BARRY LEIBA: Yeah, the _dkm _spf, follow that kind of stuff.

GEOFF HUSTON: Okay. So let's put this in the DNS by calling this _ printer.example.com, which is in the DNS, right?

RUSS HOUSLEY: Yes. I think it's it.

BARRY LEIBA: Well, I think it's a DNS name, but not a domain name.

GEOFF HUSTON: Look, Barry, I'm not sure of the way this rule applied either, I can go with any answer. But I think it's worth highlighting that there's a subtle distinction going on when the underscores are deployed.

BARRY LEIBA: So why don't we put a question mark on both of those and let us think about it and people can make comments in the document after we mull it over rather than getting stuck on that now.

GEOFF HUSTON: Fine by me.

RUSS HOUSLEY: Let's put that as our first homework. People comment what they think it ought to be because I think this could be an interesting rattle.

SUZANNE WOOLF: I think it's not an -- well, it's a rattle.

RUSS HOUSLEY: Okay, you don't still think it's interesting.

SUZANNE WOOLF: No, no. Here's the problem, is I've become convinced over the years that some of these terms will never have self-consistent usable definitions that apply across the whole scope of what people do with DNS because nobody has been paying attention to that for the most part of the entire history of the DNS. So I wouldn't be a bit surprised if there was no self-consistent definition possible.

BARRY LEIBA: Good point. And I'm not sure that the underscore thing matters for this discussion very much because I don't think that's what the issues are going to turn out to be around, but it doesn't hurt to try to get some clarity on what we can.

GEOFF HUSTON: It all depends on where you want to go with evolution here, Barry. And part of this thing is, is the DNS labelled a string or a piece of microcode to a resolver? Because if you take the latter definition, that it's simply an instruction to a revolver, then I can readily conceive of enhancing that character set and doing all kinds of stupid, it's not even DNS tricks, it's stupid name equivalents tricks in the name to create outcomes, which are "surprising. "

BARRY LEIBA: Yeah, I agree. And that's what we're talking about here. Okay. Well, let's trundle over to section 6. And so Andrew made a start at sticking in the perspectives. There's an introductory paragraph and then he put in the first section. What we want to look at is, is this the angle we want to take? Is this the right style that we want to write this in? So let's look at the first section that Andrew wrote and see what we think of it. Part of the question here is, is this the way we want to write it? Part of the question is, is this written for the right audience? Is the technical detail at the right level, not too high, not too low, whatever?

GEOFF HUSTON: I appear to be anonymous cranking at the moment, and I just highlighted the user's expected result.

BARRY LEIBA: The results that you expect.

RUSS HOUSLEY: Would you prefer surprising? Which [00:11:24 - inaudible] surprising result?

BARRY LEIBA: It's just the wording.

GEOFF HUSTON: Well, it's actually it may not yield a consistent result.

BARRY LEIBA: Okay. I'll buy that.

GEOFF HUSTON: Your printed out local and my printed out local are two different printers, and quite frankly, I expect that to be my printer, and you expect that to be yours. That's an expected result. This is not consistent.

RUSS HOUSLEY: Yeah. Good point. It's surprising, though, if I resolve it and get your printer.

GEOFF HUSTON: Well, but that's not the expected behavior of .local, right? I'm at the point is in paragraph two. You talk about the consistency of the DNS. I can use the label in the [00:12:14 -inaudible], the name, and a whole bunch of different contexts that go to the same place. And the next paragraph says, MDNS breaks that rule.

RUSS HOUSLEY: Yes, very good. You convinced me.

WARREN KUMARI: So, I mean, I'm a little confused by what the consistent result, consistency between what? Like if I go to printer.local.

RUSS HOUSLEY: Maybe the way to say this, Warren, is different users get different results as expected.

SUZANNE WOOLF: Property we're talking about here might be as stability.

RUSS HOUSLEY: We'll purposely get different results.

WARREN KUMARI: Well, what I'm confused about is why were suddenly disappear down into browser or email client world. Like, if I go to octopi.local in my browser, I get my local octopi server. That's the same result that I get if I try and use where to configure that as my printer, right? Like, MDNS advertises many, many, many different services, including printing an SSH, and web, and blah blah blah. So why are we certainly talking about browsers?

BARRY LEIBA: Well, we're talking about browsers because we're talking about users, and browsers are things that users use. We're trying to give this from the perspective of the user maybe being surprised by the results they get because of these issues.

WARREN KUMARI: Yeah. I mean, it's just the last sentence to me, I don't understand why it starts with yet it is possible. Like, I as a user, I expect that if I print and I try to print a printer.local, it will likely get to a local printer. I expect that if I open in my browser and go to octopi.local, it reaches my local octopi server. Or actually, if I go to what my printer name is in my browser, I reach my printer's webpage and that's what I would expect to have happened. I think maybe I'm wildly misunderstanding something.

ANDREW MCCONACHIE: I think I'm using a bad example here, Warren, and I think you're pointing it out. Is that it will actually do what the user wants to do because the browser understands MDNS because the browser knows what to do with that local? And I was trying to find an example where you would put that local name in something that would do the wrong place.

BARRY LEIBA: The sort of thing that we have been talking about is that the user gets a name off of an advertisement for some new service that uses some alternative resolutions process. And that works fine if you type that name into an app that's designed for that thing. But it doesn't work if you put it in the browser because the browser's going to use the DNS, and it's not going to do the right thing. Andrew, is that where you were trying to get at with this?

ANDREW MCCONACHIE: It was. Yeah, and I guess I didn't understand that some browsers understand MDNS.

WARREN KUMARI: I believe that Chrome, Chromium, Edge, and Firefox, I think actually like pretty much all of them do. But my SSH client does as well. Like, an SSH to swires.local, which is the local machine of vice versa of a server, which announced itself via MDNS, and my machine SSHs to it. And I can browse to it using Windows browsing to nas.local, which is my NAS. So many things, I think, understand MDNS at this point.

GEOFF HUSTON: So the point you were trying to make, Andrew, if I read this about six times, is you were working on the assumption that there are browsers and or email clients that do not understand the fact that .local is an implicit signal to use MDNS. And if a user enters that in, they get an unexpected answer. Is that where you were heading?

ANDREW MCCONACHIE: That is where I was heading. Yes.

WARREN KUMARI: I think that it's always or possibly the [00:18:01 -inaudible]. It's always dangerous to assume what a user expects.

GEOFF HUSTON: Right. And consistent can be written in many ways, but if you don't understand MDNS and you type swires.local, and I type swires.local, we're not going to agree. And if I type it into a browser that

understands MDNS and I type it into my SSH client that does not, I'm going to get inconsistent answers. And I think the qualification you're aiming for, Andrew, which maybe needs more text, is this implicit association of a reserve TLD with an altered resolution form is not consistently supported across all applications and clients in the user environment.

WARREN KUMARI: I mean, I had more understood that the issue is that if I go to printer.local and you go to printer.local, we are likely to be going to two different printers and that users have come to expect. And yes, I understand. I just said it. I understand what users expect is dangerous. But users have always thought that if they go to w www.microsoft.com, it is a unique name. So I think the sort of a surprising part is that the same name can refer to different things, right? Like my printer.local are very different, and that's by design.

GEOFF HUSTON: So a subtle variant of you, It's not you and me anymore. It's you, Warren, and on your screen is Safari and Chrome. And you type in Geoffsillydomainname.local, and you get a different web page in both browsers, and both of them are okay. It's just one understood MDNS and the other one didn't.

That was sort of where I was heading to in trying to understand what that sentence was trying to say. So it's not even you and I go to a different printer. It's that app one and app two go to different places even on the same machine, even on the same local context because one

understands that implicit mapping into a different resolution function and the other application does not.

WARREN KUMARI: Yeah. Well, I mean, I don't think if we get to different things, it's possible that one thing will work and get me to it. The other one will just throw an error. But, I mean, I cannot find a browser on my local machine which does not understand MDNS. And I've tried --

GEOFF HUSTON: Lynx?

WARREN KUMARI: I have not tried Lynx, but I've tried Opera, Safari, Chrome, Chromium, Edge, Firefox, and an ancient Mozilla, but I wonder if Lynx works.

GEOFF HUSTON: It's so, why? We're getting down a rathole. We're deep down. I think we're reaching the center of the earth.

WARREN KUMARI: I always thought that users assume that a domain name should get everybody to the same thingy, and this breaks that assumption.

BARRY LEIBA: So I don't know. It depends whether you mean the same global thingy or the same functional thingy. It's very clear that typing, let's say,

google.com in a browser gets you to a different place depending on where in the world you are. It does local resolution, but it gets you to the same functional thing. It gives you the appropriate search page for where you are. And the same thing with printer.local. It's going to get you to a local printer that's whatever your default local printer is. And that's the thing you want to get to. You don't want to get to a particular globally consistent printer.

WARREN KUMARI: I understand what you're saying. And yes, if from Sydney types google.com, he will in fact reach a different thing than me, but they will both or really, really, really should both be owned by and appear to operate largely the same.

BARRY LEIBA: Right. They will be the same functional thing.

WARREN KUMARI: Yeah, but I don't know if a user thinks, oh, Geoff is going to a different machine than Warren. They think that Google is one computer.

BARRY LEIBA: Well, when I go to another country and type google.com, I will often get a Google page in a different language that I don't understand.

WARREN KUMARI: Yeah. But do you think that users think that that's a different Google or do you think that they think Google was annoying and chose the wrong language? Anyway, that is not important, but Wget does not understand MDNS, whereas Lynx does.

BARRY LEIBA: Well, what I'm what I'm trying to do is focus. Let let's focus on them, on what we're trying to say, not what we said wrong.

GEOFF HUSTON: So what you were trying to say was paragraph three is an exception to paragraph two. Deliberately, there is some forms of name based signaling back to my microcode thing that talks about a different resolution environment. And you're trying to say, that's okay. And the final sentence is when I say you, I mean, Andrew, by the way. The final sentence says, but there are corner cases where collectively we've stuff that up because some applications, clients, whatever you want to call them, are not aware of that implicit signal to use an alternate DNS. So you're making kind of into that paragraph.

RUSS HOUSLEY: We talked about that, I don't know, second meeting of this work party. Where there's an implied context and if you don't know that context, you get surprised is how we put it back then, and I don't know how. And I think this paragraph was trying capture that idea and it doesn't, like if you used, .onion and you're not using a tour or browser, you will be disappointed in some form. I don't know what the best example to

drive that home is, but the point is it's overloaded in the name that context is.

GEOFF HUSTON: But I thought there was a second point that Andrew was making. And the second point is not all applications even in the one home environment, my phone, my laptop, whatever, not all the applications that I use, offer the same functionality. And we have always assumed in our tiny little human brains that a domain name in a browser is a domain name in a command line is a domain name is a domain name. And I thought the point Andrew was making is sometimes that doesn't hold, and that's a bit weird.

RUSS HOUSLEY: I think we were trying to make both points and maybe we think that'd be the [00:26:30 -inaudible].

GEOFF HUSTON: Yeah. I agree.

WARREN KUMARI: I mean, I don't know how much I -- and I somewhat agree with that, but I think, generally, people expect a domain name to work in a browser and they don't really expect it to work anywhere else. They don't really expect that they can go to www.microsoft.com, and they'll get a pretty webpage that therefore they should also be able to take

www.microsoft.com into their mail client or their Facebook and have it do something useful.

BARRY LEIBA: Well, now that's where we get interesting because that's getting blurred. Marilyn uses Yahoo mail and she uses it on her iPad with the Yahoo app. And when she taps a link in her mail, she gets a thing that comes up in her Yahoo mail app. It doesn't come up in what she perceives as a browser. So we're getting that blurred a lot where apps have built in web resolution stuff that does what we expect it to do most of the time, but doesn't quite behave the way our browser does. And so yeah.

WARREN KUMARI: I guess, actually, instead of us trying to figure out what it was that Andrew was trying to say with the sentence, and infer backwards, maybe just be like, Andrew, other than, hey, sometimes browsers resolve that and you weren't aware of that. What were you actually trying to say?

ANDREW MCCONACHIE: Well, I mean, I don't know if it matters so much what I was trying to say. I mean, I I've been listening to this conversation and getting a lot of really good feedback about what I should be trying to say. And so in that respect, I really appreciate this conversation. Let me rewrite this because I think I was trying to accomplish multiple things with one

sentence, and it's just way overloaded. So I need to just add a pile of more text here based on the conversation.

WARREN KUMARI: Some users may understand this implied context and some may not. I think that's the core part of, like, strings that end in .local are somehow different to strings at end in .com. And generally [CROSSTALK].

BARRY LEIBA: And that's not obvious from the syntax. So there's is without some other knowledge, there's no way to know that that's the case.

WARREN KUMARI: Exactly. Yeah, it's not just that it's not obvious. It is. You have to have outside context to know it is special in some way.

ANDREW MCCONACHIE: But to your point that users really just can see the domain names in terms of browsers, do we think that users recognize that the thing to the right of the @ symbol and an email address is the same kind of thing as what they put into the browser?

BARRY LEIBA: I think largely they don't. Some clearly do, but I think largely they don't.

ANDREW MCCONACHIE: Okay. I kind of felt that they did, but they didn't necessarily understand that the www bit is [CROSSTALK].

RUSS HOUSLEY: Optional at best, right?

ANDREW MCCONACHIE: Yeah, optional at best.

SUZANNE WOOLF: Is there a user interface person in the house?

BARRY LEIBA: There is not, unfortunately. But, yeah, I have encountered websites that where you do need the www for it to work right still.

WARREN KUMARI: I think I counted a bunch of sites which you can mail. Barry@www.microsoft.com, and it's right enough to just strap off the www part because it's like, well, obviously, that was not intended.

RUSS HOUSLEY: What did they do? Put an MX record in www?

WARREN KUMARI: Yeah.

GEOFF HUSTON: Why not?

RUSS HOUSLEY: Sure, it's one way to --

GEOFF HUSTON: Get more stand.

RUSS HOUSLEY: For us, address a human failure, right?

WARREN KUMARI: www.microsoft.com indeed has an MX. But of course, it's like 400 [00:31:12 - inaudible] into like a mile, but whatever.

BARRY LEIBA: Part of it is that we have a great deal of that going on the Internet that where we work around user confusion issues all the time by doing --

RUSS HOUSLEY: And introduce them, it's the same by doing so.

WARREN KUMARI: So the most popular Google search in the world is Facebook. The second is YouTube. Then Amazon, then weather, then of course,

Google because that makes sense. But that sort of shows users. I mean, I must admit if I want to get a Facebook, which I don't, I would just type in Facebook and push enter. But users often also type-- I have no idea why I was going with this anymore.

BARRY LEIBA: No, but that's been a long well-known thing, which is one of the reasons that I thought these generic TLDs were a stupid idea. Because ever since we got rid of the search bar in the browser and just put the URL bar in the search bar in the same place, we've blurred the difference between typing in a domain name and just searching for something. And basically, the way users find anything now is just by typing the search. They don't care about domain.

WARREN KUMARI: It used to be in order for me to do anything with my Google stop options, I would have to go to benefitaccess.solomansmithbarnie.com. And I cannot really spell benefit nor access because it's one c or two c's or one s or two s's. Solomon Smith Barney is that solo men, solo man, and Barney or Barney.

And so I would never actually try and type the domain name because there was way more chance of me ending up at the wrong site than simply typing in Solomon benefit Smith access something into the search. And the first answer by definition will be more safe than me trying to guess the [inaudible – 33:30] domain name. And I think that that kind of illustrates.

BARRY LEIBA: My plan for stealing Warren's Google stock just went out the window.

WARREN KUMARI: Yeah. Yeah. Yeah. But I mean, the fact that there is that and also I once on a plane tried to find an app other than Chrome or Safari that lets me enter a domain name in a phone app. And I was not able to find one. So I think domain names increasingly are not what's important. It is the UI and the interface. Like, people don't type in facebook.com. They type in Facebook into a search thing and push enter.

BARRY LEIBA: Well, or they tap Facebook icon on their desktop.

WARREN KUMARI: Yep. Or they click the WhatsApp button on. I was in Africa recently and almost no shops have a domain name listed on the outside or like billboards or something. They don't have, like, find us on the web at www.yourlocalshop.com. Instead, they have WhatsApp: blog. And that's --

BARRY LEIBA: Or they have a QR code.

WARREN KUMARI: I don’t know why I'm getting on the set box, right.

GEOFF HUSTON: The reason why you were getting on the set box, Warren, is that one of the possible evolutionary directions of DNS resolution is throw all this shit at Google search and forget about it.

WARREN KUMARI: That's already happened, I believe.

GEOFF HUSTON: Well, that's what you're saying. That's the conversation topic that you you're touching upon.

BARRY LEIBA: Well, from the certain user point to that --

WARREN KUMARI: So you mentioned that, because I still own high domain names. Sorry.

BARRY LEIBA: From the user point of view, and then what happens in the background is magic.

WARREN KUMARI: Yes. So that's very true. However, the fact that it's all magic and that it doesn't actually matter, like, my example of microsoft.com, when I try to look up the mx record, this is what Microsoft.com's DNS answer is. It

is simply a set of c names to aka DNS.net, which is not a name that anybody would recognize. Seeing as the names increasingly are not important. Like, you don't need it to be Microsoft or your brand name, people just search for that. And the final resolution thing is not a human recognizable name. It's e136 blah blah blah.dscb.akamaiedge. Why exactly are so many of us getting on a plane and flying halfway around the world to go talk about [00:36:23 -inaudible]?

BARRY LEIBA: The problem is when these are the things that happen in magic background, it's fine. When these things get exposed to users, it gets less fine.

WARREN KUMARI: Yeah. But I mean, I think what we're saying is increasingly these things are not exposed to users right there.

BARRY LEIBA: Well, they are in phishing email and stuff like that. And that's when it gets dangerous.

WARREN KUMARI: If they weren't human recognizable, people wouldn't try and recognize them and phishing emails. They wouldn't. If my bank looked like that, I wouldn't ever try and infer what the hell that means. I wouldn’t.

ANDREW MCCONACHIE: It sounds like I need a whole paragraph on search engines. Because the first paragraph here, the one at the top of the screen is really about the usefulness of domain names as signposts and for discovery. And that's an old way of thinking. So I need some [00:37:28] paragraph talking about search engines.

WARREN KUMARI: I think that if you're cool, it's search engines, and if you're very cool, it's mobile apps.

GEOFF HUSTON: But the point you're making, and I think all of you are making this, is that the DNS was a way to solve a particular problem. And it's not, as we appreciate these days, the only way of doing that. And we're exploring every possible alternative over time to actually do that function. And it's not that the DNS evolves, it's that the function has other answers and the replacement of search for DNS.

Yeah, the replacement of apps for where do I need to go? What do I need to do? That whole thing about the DNS is not the constant must do thing here. It's the functions that the DNS performs and other folks are exploring alternatives. And if they get it right, the DNS kind of disappears as an artifact of history. Cool.

WARREN KUMARI: Yeah. I think I I'll [00:38:39 -inaudible] on that very slightly. It's not just that the DNS is not the only way to do it. For a long time, it hasn't been the dominant way that users interact with it.

GEOFF HUSTON: But users interact yes, yes.

WARREN KUMARI: Yeah. Like, I can't remember where somewhere there's a graph showing the last when it was that users stopped using the domain name to reach Facebook as their main interaction. And I think it was like 2009 when it became more common for users to either click on the app in their phone or you type Facebook or some sort of fake typo thereof into a browser bar and follow that. That's collected from a number of interactions through the browser bar.

BARRY LEIBA: So that leads me to our homework for the next three weeks because one of the things that I was going to mention in about 10 minutes, but I'll mention it now, is that we are off for three weeks. Because next week we've canceled because people will be traveling to KL, some. The next week is the KL meeting, and the week after that is the week we give people off for the week after the meeting. So that puts us into the first Thursday in October. And I don't want the three weeks to be completely idle.

So what I would like to ask people to do is work on this section. See what Andrew updates here, put in your own text, make comments, and look at, Andrew, just scroll down to the other perspectives, look at the other perspectives and start flushing them out. Perhaps just with notes,

perhaps with finished text, whatever we can do to get this section plumper and moving.

It would be great if we could get volunteers to take particular perspectives. So if somebody's willing to do that, please speak up. I mean, it's three weeks. It's lots of time, and there's going to be plenty of time on long flights. Shorter flights than usual for Geoff, perhaps, but longer for the rest of us.

GEOFF HUSTON: I will be doing this from home. I'm happy to take something on, but I don't know what, and I don't know when yet. It's a bit vague as to when I get time to do this. That's all.

WARREN KUMARI: Okay. So very closely related to that. Who all here, or who all on this call is going to be in Kuala Lumpur? Because it feels like there's a number of these questions that would benefit from us chatting.

BARRY LEIBA: I will be there until Tuesday. Russ will not be there, and Geoff has just said he will not, and Suzanne just put a check mark. So it looks like about half of us will be there. Half of us work party [CROSSTALK].

WARREN KUMARI: Okay, Sarah will be there. Sweet. So we should try and chat.

BARRY LEIBA: We are more than half. I think Merike will be there, so we should be able to grab her.

KATHY SCHNITT: Merike will not be there.

BARRY LEIBA: She'll not.

KATHY SCHNITT: She said she'll join remotely, but, yeah, she's not attending.

BARRY LEIBA: Okay. Geoff just pointed out this close to the same time zone as him, so we can loop him in through zoom easily.

GEOFF HUSTON: Yeah. Thanks, Barry. That true.

WARREN KUMARI: [CROSSTALK] Australia.

GEOFF HUSTON: Sorry, Warren?

WARREN KUMARI: I'm just saying we should instead be in Red Hill or sort of that area instead of Kuala Lumpur.

GEOFF HUSTON: Come on down. It'll be a little bit cooler. In fact, a lot cooler than Kuala Lumpur. And that may be a good thing, who knows.

BARRY LEIBA: Like food won't be as good.

GEOFF HUSTON: Oooh, there's a lot of Asian places around here.

BARRY LEIBA: It's true. Yes.

WARREN KUMARI: Actually, if you want good food, it should be Singapore for the Din Tai Fung. Is there a Din Tai Fung in in Kuala Lumpur?

BARRY LEIBA: I wouldn't doubt it.

GEOFF HUSTON: There's one in Sydney.

BARRY LEIBA: For the Malaysian food. I want the Malaysian curries.

WARREN KUMARI: Oh, yeah. [00:43:26 -inaudible] Malaysian curry? Let's go to South Africa instead.

BARRY LEIBA: Okay. So, Andrew, should we do more bashing around in the text above here?

ANDREW MCCONACHIE: You're welcome to bash. Yes.

BARRY LEIBA: We got stuck on that one paragraph. We have the result that you're going to do some rewriting. Let's us for the next 10 minutes that we have go through the remaining paragraphs here.

ANDREW MCCONACHIE: Okay.

BARRY LEIBA: So I think just this bit here, for many end users, the web and email are the primary or only services they use on the Internet. I think that is way less true than it used to be to the point where I think it's actually wrong at this point. Email definitely still, but web is sort of becoming phone apps and tablet apps. And the way they interact is completely different

and all of that magic of typing in domain names and stuff is completely hidden from the user. It's all done through the app interface.

RUSS HOUSLEY: That's right, or QR codes.

BARRY LEIBA: Or QR codes. Whatever it is that gets you to the app or to the website that were no longer exposing domain names to users in the way we used to. An email client --

RUSS HOUSLEY: I think COVID accelerated that where restaurants put QR codes in their window to get the menu. And on that.

BARRY LEIBA: Oh, yeah. And on the table. And now I use a QR code to pay my bill a lot of the time.

RUSS HOUSLEY: It used to be like the side of a bus or something, but now it's all over the place.

GEOFF HUSTON: So what we're finding now is kind of the DNS dividing, and that there are a set of names, which are traditional names, www.microsoft.com. And increasingly, a population on the internet of internal mapping and

transformation names such as c-3.edgekey.net.akemi.this.that, which was never intended for human consumption, but is a mapping process. And we sort of have this view in this section and in that paragraph in particular about names and uses.

And the answer really is the DNS has gone and morphed into a number of things at once. And some traditional presentation label names that attempt to be in the language of the user, the reference known brands or whatever known sort of points and other names are just gobbledygook because they're not intended for any use other than their mapping function. Now I don't show the point to that --

RUSS HOUSLEY: Geoff, I agree with you, but I'm wondering if the stuff we see being done like with Salesforce where purposefully you'll get redirected to different places dynamically and not just for load balancing, but because the workflow state changed behind is part of what you're -- I think at the beginning of this conversation, you said, "Oh, they just throw it into the domain name," right? And it's really more like the metadata that's thrown into the state that impacts the resolution. And I was wondering how that affected what you just said.

GEOFF HUSTON: Almost right up at the start of this section of 6.1. There's an implicit assumption in this text that end users use the DNS. And I suppose the qualifying statement is, that's actually not true. There's a subset of DNS names that are used in a context where there is an expectation that users are going to find those names persistent and meaningful.

And there's an entire universe of other names. It's a bit like real numbers versus integers. There's a set of useful integers that the world of real numbers is scary. And there's a set of DNS names that are not intended as either being persistent or anything, which dominate the DNS. But we're not talking about that in this section. It might make the rest of the section have a bit more context.

RUSS HOUSLEY: Yeah. Actually, somehow leading in that, I don't know, implicit assumption has that ship's already sailed. Right?

GEOFF HUSTON: Right. Totally over the horizon and gone. The DNS is too good just to use it for mere human. Yes.

RUSS HOUSLEY: Well, actually, humans find these little icon things easier. That's why I had a little phone is covered with them, right?

GEOFF HUSTON: But my point is I suppose if we put that at the front, it would make the rest of these paragraphs easier to deal with.

ANDREW MCCONACHIE: I agree with that, which is why I think that this discussion about search engines and QR codes and apps, it needs to be right at the front of the section.

RUSS HOUSLEY: Yes, it may end up being the whole point.

ANDREW MCCONACHIE: It could be. I mean, it is the evolution. It's supposed to be the evolution of naming. So it's the old and the new. And I think the SSAC has used the term infrastructure names in the past. There was a there was a document the SSAC produced on how infrastructure names should always be asking and you shouldn't use IDNs for infrastructure names or something. So maybe I can borrow something from that with this concept of names that are not really meant for presentation, but kind of dual use of the DNS in that regard.

BARRY LEIBA: Sounds like one of the things I tell people about internationalization and IETF protocols. There's no need to use non-ASCII characters in protocol stuff.

WARREN KUMARI: So, I mean, I'll try and find if I have a public link to this, but there was some research done where people went along and spoke to people in developing countries about whether they're using their IDN name or would want their IDN name version.

And almost invariably, people had zero interest in their IDN name, having IDN version of the name, and that was surprising because they've been a whole, like, let's push so people can use their whatever

name. And increasingly especially in the developing world and places which use non-ASCII script as defaults, users access the Internet through phones and tablets and similar.

And it is surprisingly difficult to change your input mechanism on your phone from a US ASCII keyboard to a local script keyboard and back. You can install multiple ones, but it's really hard to quickly switch back and forth between them.

So people don't like using IDNS from smartphones because it's hard to enter them. In many, many places, people access their phone through candy bar style phones, so sort of semi smartphones, where your interface is the telephone keypad and not a fancy Android or iPhone touch screen thing. And there is almost impossible to enter IDNS.

There's also for various sad cultural reasons, ASCII names are seen as more prestigious than names in local script, which is sad, but hopefully will change over time. But then even more so in many places, sort of developing world, and this was a study that was funded by developing country people. The whole like you run a barber shop or you run a small convenience store, what's your domain name or your presence on the internet? The answer is, it's WhatsApp. They don't have a name. There's no utility for that. Their interaction is either done purely through WhatsApp or Facebook.

And so it's not just that it's IDN versus ASCII. It's your construct of the internet does not match mine. For those of us who are going to be in Malaysia, it would be entertaining to actually just count how many IDN names there are that you see versus on IDN ones. So if you do it along

another axis which is ignore all the large global Coke and Macdonald's, and implement it purely in things like government and local small, small names.

BARRY LEIBA: Yeah. I once pulled all of the IDN TLDs and look through them. And the vast majority of them are Chinese, and there are a lot of things there with the .business in Chinese and .whatever that sort of thing in Chinese. There's .India in 12 different index scripts, which was kind of funny. But when you actually look at the usage of them, it's negligible.

WARREN KUMARI: So actually, to help people who want to play this game when they're there, I pasted the IDN Malaysia TOD into the chat. So if you see things that have a dot and that at the end you can put something in the-- there is an IDM name that I saw a column, and you know.

BARRY LEIBA: Well, Geoff has just said he's leaving. Sarah is leaving, and we are two minutes out from the end anyway. So how about if we wrap up and repeating for the two of you who are still on, for the one of you who are still on, Andrew will put this in his summary message as well. But the homework for next time is to go through this section and edit what you can, flesh out what you can from some of the other perspectives. And let's see if we can manage to get some problems over the next three weeks.

WARREN KUMARI: And Barry, I believe you said you will be there.

BARRY LEIBA: I will.

WARREN KUMARI: Where, which hotel?

BARRY LEIBA: The Grand Hyatt.

WARREN KUMARI: Okay. So not the Mandarin Oriental, sadly.

BARRY LEIBA: No, I will have to look at where they are relative to each other.

WARREN KUMARI: They're fairly close, but keep in mind it is a basically Singapore weather. So it is possible to go outside.

BARRY LEIBA: So I presume you booked in the Mandarin, and ICANN travel with me in the Grand Hyatt.

WARREN KUMARI: Yeah. So I mean, Mandarin to Grand Hyatt is 300 meters, but I believe that it is possible to walk through the one mall and then it's like 25 meters of outside and then another mall and then you can get through mostly through there.

BARRY LEIBA: Yeah. Or I can just operate the heat and the humidity to -- I wouldn't melt.

WARREN KUMARI: I will.

BARRY LEIBA: Okay.

WARREN KUMARI: Well, Andrew, will you be in Kuala Lumpur or Kathy?

ANDREW MCCONACHIE: I will indeed.

WARREN KUMARI: Excellent.

KATHY SCHNITT: Yes. I'll be there as well.

BARRY LEIBA: Great. It will really good to see you, guys.

WARREN KUMARI: Okay. Any of you at the Mandarin?

ANDREW MCCONACHIE: I'm at the Mandarin.

WARREN KUMARI: Yes. Okay. It's less than a minute to Din Tai Fung, so we will be there multiple times.

BARRY LEIBA: We will definitely have to go there.

WARREN KUMARI: Bye, all.

BARRY LEIBA: All right. So see you folks in KL.

ANDREW MCCONACHIE: See you in Kuala Lumpur.

BARRY LEIBA Bye-bye.

ANDREW MCCONACHIE: Safe travels.

BARRY LEIBA: You too.

[END OF TRANSCRIPTION]