



~~ARIN~~

ELECTIONS

2017

VOTER GUIDE

SLATE FOR

ARIN ADVISORY COUNCIL
ARIN BOARD OF TRUSTEES

VOTING OPENS

6:00 PM EDT
THURSDAY, 5 OCTOBER

VOTING CLOSSES

6:00 PM EDT
FRIDAY, 13 OCTOBER

TABLE OF CONTENTS



Advisory Council

| | |
|---------------------------|----|
| Andrew Dul | 4 |
| Paul Emmons | 6 |
| David Farmer | 8 |
| Joseph Karam | 10 |
| Elford Parsons | 12 |
| Kerrie-Ann Richards | 14 |
| Leif Sawyer | 16 |
| Chris Tacit | 17 |
| Alicia Trotman | 19 |
| Chris Woodfield | 23 |



Board of Trustees

| | |
|---------------------|----|
| Dan Alexander | 26 |
| Nancy Carter | 28 |
| Leslie Daigle | 31 |
| Stephen Lee | 33 |

Please note that ARIN publishes the candidate responses as they are submitted; they are not altered or edited in any way.

30 August 2017

Dear ARIN Member,

ARIN looks forward to your participation in this year's annual elections! At 6:00 PM EDT on Thursday, 5 October, the polls for the ARIN Board of Trustees and Advisory Council elections will open and will remain open until 6:00 PM EDT on Friday, 13 October. As your organization's only designated Voting Contact, you are responsible for casting an online ballot on behalf of your organization in the annual ARIN Elections.

This year, ARIN seeks to fill two (2) seats on its seven-member Board of Trustees and five (5) seats on its 15-member Advisory Council.

In preparation for voting, I encourage you to familiarize yourself with each candidate – specifically, read the information made available in this Voter Guide or online at https://www.arin.net/participate/elections/candidate_bios.pdf. Think about and focus on the policies and issues that are most crucial to you and your organization, including outcomes and actions you hope to see from each of the candidates. Take the time to read their biographies, answers to candidate questions, and Statements of Support from community members.

Remember – voting requires only a few minutes of your time and is a vital member and community responsibility. Your ballot can be cast online from the comfort of your office, home, or mobile device any time during the election timeframe. To access and cast your ballot, log in to your ARIN Online account and click on the “Vote Now” link located on your dashboard.

Thank you for being an ARIN Member and participating in ARIN's 2017 Elections! Please do not hesitate to contact our member services team at members@arin.net if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "John Curran". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

John Curran
President and CEO
American Registry for Internet Numbers (ARIN)



2017

Advisory Council

Andrew Dul



Crowdstrike
<http://www.ipaddressnews.com>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

Andrew Dul is currently a member of the Cloud Engineering team at Crowdstrike. He is also an independent networking & systems infrastructure consultant at 8 Continents Networks LLC and has been working in various Internet networking positions since 1996. Over the years, he has held various positions including network operations roles at the start-up network service provider Internap and working on the Internet in the sky at Connexion by Boeing. During his time at The Boeing Company, he helped develop the global network that supported the first commercial inflight Internet service. He also helped engineer the first IP based GSM & CDMA flying pico cell demonstration flights in 2005. After Boeing, Andrew served the Seattle based nationwide law firm, Perkins Coie, as their Systems and Network Architect before joining Cascadeo in 2010 as a lead engineer. Andrew has been involved with ARIN since 1999 helping to contribute to the development of global IP number resource policy. Andrew holds a Bachelors of Science in Electrical Engineering from the University of California, Davis and a Masters in Business Administration with a Leadership Formation specialization from Seattle University, Albers School of Business and Economics. He also formerly served on the ARIN Advisory Council from 2003-2005. He currently serves on the ARIN AC.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I do not currently have any conflicts of interest. If a conflict did arise I would disclose this and recuse myself from any specific action which was in conflict.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I do not currently have any limitations on serving on the ARIN AC nor participating in the Public Policy Meetings.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have been attending ARIN meetings and participating in the public policy development process since 2000. The most rewarding aspect of the meeting is interacting face to face with members of the Internet community. Together we can work together to manage the Internet number resources to further the growth and stability of the Internet as a global communications and interaction platform. I believe the use of mailing-lists does discourage some members of the Internet community from participating in the policy development process. I have advocated for the consideration of other methods which would allow additional voices of the Internet community to be heard.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

ARIN's function has already started to change with IPv4 exhaustion formally occurring in the ARIN region in 2015. ARIN's primary focus today is the transfer of IPv4 address blocks along with continuing to assign and allocate IPv6 addresses and autonomous system numbers. I see ARIN's role of a record keeper for IPv4 addresses continuing

to evolve along with the needs of the Internet community as resource transfers occur to the benefit of members. I believe over time ARIN's role and staffing needs could trend downward if this was desired by the Internet community. However, as a member driven organization of a wide variety of Internet organizations, ARIN is in a unique role to be able to provide technical coordination. If necessary or desired, ARIN could take on these additional roles if ARIN's membership believed it would be beneficial.

What differentiates you as a candidate or makes you uniquely suited to the post?

I have been involved with ARIN for a number of years, and while time alone does not necessarily make me the best person for this role, I believe I still have energy, knowledge, and insight to contribute to the Internet community by serving on the ARIN AC.

I'm very proud of the work I have done in my past term in authoring 2016-5. In this fundamental transfer policy change I was able to find the common ground between those who supported the traditional needs assessment and those who desired no needs assessment for IPv4 transfers. My experience of knowing the various members of the Internet community who participate in the policy development process over the years allowed me to find those common elements and craft a policy to bridge the divide.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

I have been employed by a number of different organizations while being an ARIN participant, each of these organizations had different goals at different times. In general, these organizations goals have aligned with my personal opinions but not always. As an ARIN AC member I may at times wear multiple hats. I could be discussing a policy where I have a personal opinion, or could be advocating for or against a policy which could affect my employer, lastly I could be acting as an AC shepherd where my role is to further the conversation and find the common ground needed to build consensus in the Internet community for a specific policy. This all requires a balancing act, and at times the various roles may not align, but by calling attention to the hat which I might wear, I hope to provide perspective to others who are participating with me in the policy development process.

The current discussion around WHOIS and directory services policies is an important discussion that has been going on for many years. I'm hopeful that these discussions continue to bring additional participants and opinions into the policy development process to help craft needed policy changes.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I personally have believed for a while that legacy IP address holders should have been brought closer to being treated just like other ARIN members and resource holders. However, the ARIN board has seen to continue the status quo of providing services to legacy organizations without any formal agreement or payment for services. I am, however, pleased to note that the number of legacy resources continues to shrink as many legacy resources are now being transferred and as part of this process these resources are now treated just like resources which were allocated since ARIN's inception.

What are your thoughts on needs-based justification for the receipt of IP addresses?

Needs based justification played an important role in the conservation of IPv4 address blocks as they were allocated from the registry. However, now that the free pool is empty, the role of needs-basis needs to evolve. I have supported the evolution of needs basis from a very strict set of policies to the more relaxed policies for transfers.

Internet number resources are intended for the use on operational networks. I believe this basic tenet has been a core to the Internet Registry System from its initial inception. I continue to believe this very loose requirement "use on an operational network" is an important part of needs-based justification for all Internet number resources.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

ARIN's greatest challenge is to continue to evolve as a technical coordinating body which also has the responsibility of ensuring that Internet number resources are distributed in a manner that is technical sound, fair and impartial, and supported by the community and the ARIN membership. The Internet community has looked to ARIN to provide uniqueness and technical coordination of Internet identifiers, if ARIN fails in this role the Internet community will look to others to fill this role.

If you could improve any aspect of the ARIN AC, what would it be?

I believe, in general, the AC functions very well. I believe for the AC to function at its best requires a diverse set of individuals from different types of organizations and backgrounds. I would certainly like to see some additional involvement either in the public policy process or on the AC itself from smaller member organizations and countries within the ARIN service region. I believe some additional semi-formal discussion between the ARIN AC and the ARIN Board could benefit both groups.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

As a current member of the ARIN Advisory Council,

I have been serving in this role advising the ARIN Board of Trustees.

I also have similar experiences through working with Internet organizations through my personal consulting practice. Here I have provided a number of organizations input to help them understand industry best practices and other technical and practical matters to help them further their business goals.

Paul Emmons



Ninja-IX Corporation- An Arizona not for profit corporation operating community based peering fabrics in North America. I also provide consulting services for various wireless carrier regarding their network design and connection to the public internet via Internet Management Services.

<https://www.facebook.com/beeperboyaz>
<https://www.linkedin.com/in/paulemmons/>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I maintain the ORG-IDs and network records including the IRR records for both the IX operation and consulting clients within ARIN and other RIRs. This includes do requests for IPv6, IPv4 wairlist and transfers, ASNs, Reserved IP Pool space and IPv6 transition (NPRM 4.10) address space. I am engaged almost weekly with ARIN by doing changes via ARIN Online and templates.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

no conflicts of interest at writing

Describe any limitations on your ability to attend Advisory Council and Public Policy

Meetings in person or to serve the entirety of a three-year term.

no reasons not to attend meetings

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

Yes I have attended various spring and fall meetings and at least 5 ARIN on the Road Events and have working with and interacted with attendees and ARIN staff explaining my opinion based upon my various experiences as a ISP network operator, wireless provider and IXP operator. I have dealt with both Legacy and Non Legacy Assignments.

I would like to see more encouragement of participation from wireless carriers, especially in light of their reliance of use on IPv4 more often then typical network operators. Also foster additional involvement of holders of IXP and tld/cc holders.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

I don't see any reduction in the role of ARIN in the wake of exhaustion. Instead of issuing new space, I would beleive that time and effort still takes place for waitlist and transfers along with new ASNs and Legacy services. More time would probably be spent in speeding up recovery of Non Legacy IPv4 space.

What differentiates you as a candidate or makes you uniquely suited to the post?

None of the existing AC members work for an Internet Exchange Operator. One AC member, who's term expires this year, has operations in the wireless / cellular operator space. I believe my

experiences in those segments would benefit the community as a whole.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

If elected to serve I don't expect there to be any major differences. However, I believe that the needs of the the community should outweigh the opinions of my organization as long as those opinions have been heard by the community at large.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

As a community we have to accept that the Legacy IP Holders have certain rights that came with the transfer of Network Solutions functions by the US Federal Government. Maintaining those resources records is critical for continuity and law enforcement needs.

What are your thoughts on needs-based justification for the receipt of IP addresses?

Needs based is necessary to maintain the integrity of the assignments and to promote fair use to parties actually needing the resource.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

- 1) ARIN should be aware that it's cost recovery model does not compare well to RIPE. RIPE fees are dramatically lower for Large Organizations and those organizations have been moving allocations to RIPE. Revenue is being lost by ARIN to RIPE.
- 2) ARIN still has policy that is unclear to many members regarding waitlist, transfer market and NPRM 4.10 space.
- 3) ARIN is still looked at by many outside groups as not being effective when creating policy and changing it to fit cases that may not be prominent in real life.
- 4) In the transfer market, ARIN's policy puts too much risk on the supplying party for space rather than the requesting party.
- 5) I believe that ARIN'S public facing processes can be streamlined to provide greater efficiencies.

If you could improve any aspect of the ARIN AC, what would it be?

To have a better cross section of member organizations represented with Board and Community interactions.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number

resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I have served on several state and national organizations for policy matters in competitive communications and wireless services. Also I have served in several committees and groups working with various government agencies.

David Farmer



University of Minnesota
<https://www.linkedin.com/in/davidefarmeriii/>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

David Farmer is a Senior Network Design Engineer at the University of Minnesota. He is a member of the University's Office of Information Technology, servicing in varying networking roles, for the last 23 years. Currently, he is the lead engineer and peering coordinator for Northern Lights GigaPoP a University operated network that provides ISP services for the University and other educational and government entities in Minnesota and several surrounding states. He is the University of Minnesota's and Northern Lights GigaPOP's Technical Representative to Internet2, the Midwest Internet Cooperative Exchange (MICE), an Internet Exchange in Minneapolis, and the Big Ten Academic Alliance OmniPoP, an academic network connecting most of the Big Ten institutions, and many other similar activities both regionally and nationally.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

Not aware of any conflicts

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

In the last year I have started three times a week in-center dialysis, I can scheduled treatments at other centers when traveling, but sometimes the available treatment times can be a little inflexible. So far this hasn't been a significant problem, but it is a potential issue. I am not yet active on the kidney transplant list but, once I am and a compatible organ becomes available I would have travel restrictions for 2 to 4 months after transplant, and travel outside

the US or Canada is not recommended for up to a year after transplant.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have been attending ARIN meeting for the last 9 years. I find the Joint meetings with NANOG most useful because of the additional network operators that are usually present.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

The policy focus has already shifted to the transfer market with IPv4 exhaustion. I expect the IPv4 transfer market to be a strong policy focus for several more years. I expect the focus on the IPv4 transfer market to wane as IPv4 becomes a legacy technology. Also, I expect several more years of a medium level of IPv6 policy work as more and more entities deploy IPv6. As uptake for IPv6 accelerates in certain sectors of the market, new policies tailored for those sectors could be helpful. Long-term, when IPv4 is fully in legacy mode and IPv6 deployment reaches saturation, maybe like 5 to 10 years out, there could be a significant reduction in the demand for policy work.

What differentiates you as a candidate or makes you uniquely suited to the post?

I bring to the ARIN Advisory Council, the perspective of 20+ years of experience with large scale and public sector enterprise networking.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

I try to maintain a dispassionate view toward policy, keeping my emotions out of it makes it easier to separate my views from those of my employer and those of other in the community. As an AC member I need to consider all views including my own, and my employers, I should never let my views dominate.

I believe we need to look at how ARIN policy impacts greater society, the Internet and its use has a pervasive influence on many peoples daily lives. For example, this means that the records that ARIN maintains are important to the functioning of the justice system as virtual every civil or criminal case involves some kind of electronic evidence, be it emails, text messages, etc., virtually all of these transit the Internet and therefore there is an IP address associated with them, and are associated

a database entry at ARIN or one of the other RIRs, and finally this involves policy.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

First, I work for an organization with sizable legacy IPv4 address holdings. It should be noted that as IPv4 becomes a legacy technology the importance and distinction of legacy address holders will be greatly reduced, there are no legacy IPv6 address holders. Many legacy IPv4 address holders, are organizations that helped create the Internet as we know it today, they needed and received addresses to participate on the Internet. Today legacy address holders have a responsibility to utilize their address space to current standards themselves, transfer their unused or underutilized address space to others that can utilize it through the transfer market, or return it to ARIN for redistribution.

What are your thoughts on needs-based justification for the receipt of IP addresses?

Address space has always been given out on a needs basis, the policies to determine need have evolved over the years. Now that the transfer market is the dominant means of obtaining IPv4 address space, it isn't given out, it has to be acquired on the market at a significant cost. Some believe this cost replaces the role needs based policy played in the past. I don't no believe the cost to obtain address space completely replaces the role of needs based policy. However, the policies that determine need must evolve significantly to account for the new additional role that the cost to obtain IPv4 address space plays in determining need. This policy evolution began with allowing a longer need window for transfers verses free pool allocations during IPv4 free pool exhaustion and continued with the recent changes to transfer policies following IPv4 free pool exhaustion. I expect these policies will continue to evolve, there will continue to be a role for needs based policy, all be it a much reduced role and the cost to obtain addresses will be of increasing importance and will play a more dominate role.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

Maintaining the interest and participation of end users and end user organizations in ARIN and it's mission. Most service providers understand why ARIN is important, but many end users don't even know ARIN exists, let alone participate in its policy discussions.

If you could improve any aspect of the ARIN AC, what would it be?

More AC members from the end user community.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I have 9 years experience on the ARIN Advisory Council. I served on the founding board of the Midwest Internet Cooperative Exchange (MICE) an Internet Exchange in Minneapolis. As a senior technical expert I advise several senior level executives at the University of Minnesota, primary of these is the University's Vice President for Information Technology and CIO.

Joseph Karam



Princeton University
<https://twitter.com/jkaram>
<https://www.linkedin.com/in/jkaram>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

Associate Director Networking and Monitoring Services
Princeton University
March 2015 – Present (2 years 5 months)

Manage team of seven full time employees prioritizing resources required to manage core network infrastructure and monitoring services including core routers and switches, wireless network infrastructure, DNS/DHCP, monitoring services. Prioritize and approve spending for all network infrastructure upgrades and projects including hardware and software purchases, consulting services, professional development and service contracts.

Manage projects and develop plans for improving all network infrastructure.

Princeton University
Senior Manager, Collaboration Services Group
Princeton University
February 2008 – May 2015 (7 years 4 months)

Manage six full-time employees and prioritize resources required for the administration of central application services for electronic mail, unified communications, web content management systems, collaboration systems, and video streaming.

Prioritize resources required to improving and en central application services for electronic mail, web services, collaboration systems, and video streaming.

Prioritize and approve spending for all central application server hardware, application software, service contracts, consulting services, and professional development.

Manage projects and design plans for the improvement of enterprise applications.

Provide expert recommendations and management for all enterprise applications managed by the Collaboration Services Group.

Hamilton College
Director, Network and Telecommunications Services
Hamilton College
August 1999 – February 2008 (8 years 7 months)

Supervised three full-time employees, two student interns, and external consultants who managed all telephone, network, and server administration functions.

Prioritized and approved spending for all network and server hardware, application software, service contracts, Internet and telephone services, consulting services, professional development, and employee salaries.

Designed, installed, and managed a 6,000 node Cisco Gigabit switched network, campus cabling plant, firewall, VPN, UNIX servers, Windows servers, Macintosh servers, and other security systems.

Developed and maintained project plans, security policies, procedures, standards, and other documentation for the network and server environment.

University of Rochester
Senior UNIX Systems Administrator
University of Rochester
October 1995 – August 1999 (3 years 11 months)

Installed, maintained, and evaluated systems software, hardware, and applications for Solaris, SGI, and RedHat UNIX systems.

Collaborated with other systems administrators and interfaced with vendors on behalf of University departments.

Monitored and maintained UNIX system and network security. Responsible for handling UNIX system policy and security issues.

Provided administrative, training, and technical support to 8,000 students, faculty, and staff for electronic mail, mailing lists, programming tools, and statistical applications.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I do not have any conflicts of interest. I will advise ARIN independently and keep my responsibilities

at Princeton independent.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I have no limitations to attend meetings in person or serve a 3 year term

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have not attended ARIN meetings or other ARIN procedures.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

I see ARIN continuing to focus on IPv6 adoption and education. I feel that there could be dedicated resources to assist different organizations in their adoption of IPv6 moving forward. From small businesses to higher education to large multi-national corporations, IPv6 needs vary greatly.

What differentiates you as a candidate or makes you uniquely suited to the post?

I have considerable experience in large network environments in higher education and managing many other IT functions including mail and web services, security systems, storage, servers and telephony. I enjoy being a member of an organization leading technology advancements for the future.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

I feel that my educational background and experience in a variety of roles in higher education can provide ARIN with some beneficial recommendations and assistance in many areas of future growth and setting priorities.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I think ARIN can provide education and recommendations to a variety of organizations to assure they have the information they need to effectively use their address blocks, transfer them to someone else, or give them up. Determine if some incentives could be identified for organizations to give up unused

space. For example, decreased renewal costs.

What are your thoughts on needs-based justification for the receipt of IP addresses?

I think people should justify their needs for IP address space blocks and be educated on how to properly size their blocks.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

Furthering the adoption and management of IPv6 address space

If you could improve any aspect of the ARIN AC, what would it be?

Reaching out to large organizations to have a better presence at conferences where they can represent ARIN and discuss IPv6.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I have been involved in non-profit advisory boards and other technical advisory boards. I enjoy participating and am very active in doing my part to be successful with our goals and priorities.

Elford Parsons



The Telecommunications Regulatory Commission (British Virgin Islands)

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

A 30 year veteran of the Telecommunications industry, he is the founder and owner of Tech It Easy (BVI) Ltd. Being a technician was always a goal of his and he got started during his final year at the BVI High School, now Elmore Stoutt High School. He vividly recalls his electronics class building a model radio station and being awarded the privilege of demonstrating it at his graduation ceremony. From then, he always wanted to be involved in “technical things”. Several years after graduation, he got the opportunity to join Cable & Wireless (WI) Ltd, now FLOW as a Technical Watch-keeper and that kept his technical appetite permanently wet. Early on in his career, he was instrumental in bringing Broadband Internet service to the British Virgin Islands, and in later years he was among the leaders of the team that implemented the 4G cellular service for the company.

Over the years he has served on various boards including:

- The British Virgin Islands Electricity Corporation
- The National Parks Trust of the Virgin Islands
- The British Virgin Islands Ports Authority
- The British Virgin Islands Government’s Scholarship Advisory Board

A Rotarian for the past 10 years, he has served as Vocational Services director and Director of Club Administration.

He currently enjoys his role as Chief Technology Officer at the Telecommunications Regulatory Commission of the Virgin Islands where he advises the CEO on technology matters and is actively involved in shaping the telecommunications landscape of the British Virgin Islands.

Please disclose any conflicts of interest you

may have with doing your duty as a member of ARIN’s Advisory Council. How do you propose to resolve such conflicts?

None that I am aware of.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

None. I have already discussed the possibility of this with my CEO and have his blessing.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have not attended any ARIN meetings in the past but I did, at one time, take the opportunity to read the minutes of one such meeting. I found it quite enlightening.

Not having been exposed to these meeting before it would be impossible for me to share suggestions for improvement.

In addition to the specific duties of the council, I am confident this appointment will give me the expanded opportunity to network with other industry professionals.

How do you foresee ARIN’s function, scale, or role changing in the wake of IPv4 exhaustion?

I am of the view that ARIN would benefit from expanding its outreach to smaller communities, promoting the adoption of IPv6, in the face of IPv4 exhaustion, while offering support with acquiring and managing IPv6 address space.

Sharing expertise on best practises in IP address acquisition and management would be valued in the internet community.

The maintenance of an accurate Whois database is critical and appropriate resources should be allocated to ensure this daunting task is continuously performed.

What differentiates you as a candidate or makes you uniquely suited to the post?

Coming from a “small” community in the Caribbean region, I firmly believe that the needs of this geographical area are just as important as those of the larger territories and as such we should have an voice in the numbering assignment policies

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

In my current role, I provide advice to my CEO on technology related matters. Because we are essentially consumer advocates, my personal opinions and by extension the advice I provide is often coloured by input from the consumers I interact with.

Fundamentally it is about striking a balance but ensuring that the long term viability of the internet is maintained.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I fundamentally support legacy address owners' right to use the address blocks allocated to them but they should still be good stewards of the allocation by abiding with established policies for efficient use, accurate reporting and adhering to all policies related to transfers.

I do not think legacy address holders should be allowed to retain address space that is unutilized and unjustifiable. Hence accurate reporting (with the possibility to conducting regular audits) will go some way toward ensuring ARIN's Whois database is appropriately updated.

What are your thoughts on needs-based justification for the receipt of IP addresses?

In light of the exhaustion of IPv4 address space and in the interest of fairness in the community and the spirit of the Internet, allocations should continue to be justified on a needs basis

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

In the face of IPv4 exhaustion I believe ARIN's greatest challenges will include remaining a relevant entity as the transition to IPv6 occurs. Given the scope of the IPv6 blocks, there will be very limited opportunities for interaction with external organizations, hence providing other value added services will be critical to ARIN's existence.

The maintenance of an accurate Whois database will also prove extremely challenging as a result of unmanaged IPv4 address transfers.

If you could improve any aspect of the ARIN AC, what would it be?

As I have never served on the Advisory Council before, I am not armed with sufficient knowledge

or information to offer sound recommendations in this regard.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

My current role as the Chief Technology Officer at the Telecommunications Regulatory Commission of the Virgin Islands requires me to advise the CEO on technology related matters. This involves me staying abreast with emerging technology trends and regular interaction with public and private sector organizations, understanding their needs and based on such needs, contribute to the development of policies to address these needs while ensuring that the needs of the wider community are not negatively impacted .

Kerrie-Ann Richards



VFJ Coding Ltd

<https://www.linkedin.com/in/kerrie-ann-vassall-richards-bsc-mbcs-b7385b7/>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I have extensive international experience in Adult Education and Information Technology. I've studied at the University of Technology Jamaica as well as London Metropolitan University, possessing degrees in Marketing and Business IT. I am an experienced and certified business coach and readiness evaluator. I honed this skill in my present role at the Branson Centre of Entrepreneurship Caribbean as the Entrepreneur Development Manager. I have organized many workshops, Code Sprints, and Pitch Preparation sessions. I have been an IT Pitch Competition Judge since 2011, judging a number of international competitions. I have sat on the planning committees for several international conferences, such as International Federation for Information Processing (IFIP).

I am a Director for Vision for Jamaica trading as VFJ Coding which introduces coding to primary school children. As a parent and entrepreneur, I want to make sure that policy perspectives are broadened to encompass the needs of developing nations (Caribbean).

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

There are no known conflicts of interest that would hinder the performance of my duties.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

My only limitations are visas. I currently hold a US visa and have held a UK visa several times in the past as well as Schengen visas

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

My first meeting was ARIN 39 it was an eye opener. It really felt as though I was getting a peek behind the curtain. Internet policy can seem fuzzy at times and I think I was well supported by the various printed material and my mentor.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

Whilst I see no change in functions I do think that more offerings will be necessary to scale. With most transactions being IPv6 it is very likely that there will only be one request made for address space. Legacy transfer requests will start tapering off in the near future as well and this will mean that eventually a review of operations and automate, even more, processes.

What differentiates you as a candidate or makes you uniquely suited to the post?

I have a varied background which is not solely in technology. I headed an ICT NGO for a few years and sit on the board for a coding NGO. I was on the front lines of the Data Protection movement in the UK in 2002- 2008 as in related to Asylum seekers and refugees who were seeking state funded certification in literacy and numeracy and the (European Computer Driving Licence - ECDL

I took the lessons of Data Protection, Adult Education, and business back to Jamaica where I have been able to successfully influence digital change. I strongly believe that last mile connectivity is a huge issue that has the ability to keep families together, provide new kinds of employment and reduce brain drain in developing nations.

The English speaking Caribbean voice is missing from the ARIN AC and I think that I will be able to share knowledge gained as well as effectively poll Caribbean Tech leaders for their input on policy. Policy drives economies and I think this is where I will be able to make a trifold difference to the AC, my region, and my personal growth.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

I was exposed to the policy development process at ARIN 39 and I was amazed at how open it was to the representatives of various groups. The AC was able to remain objective in fielding feedback and I am sure that the in person feedback was considerably tamer than the feedback via online discussions (which I have observed in the past). I will advocate for developing nations always and I will declare it here and if enough votes come in to put me on the AC. I will however always decide on the greater good and remain objective.

I think all things related to IPv4 number transfers is still quite fuzzy to me. That may be my personal opinion based on not being directly involved in that aspect of ARIN but I do think that process streamlining to create greater clarity for stakeholders is key.

Although not asked for here, I think the PDP flowchart is a wonderful and clear illustration and should form part of a public education module to foster greater input for developing countries.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I think all legacy address holders rights should be upheld but I do think that they are to be held to the rules of comprehensive, correct and current contact details in cases of hoarding of blocks or any other major issue that may arise (foreseen or unforeseen)

What are your thoughts on needs-based justification for the receipt of IP addresses?

I think that a projection of growth template, that takes into consideration all of the potentials, should be a basic requirement as well as accepting the conducting periodic audits to measure performance against projections. This would have a clear and unbiased metric to govern any claw back.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

I think IPv6 awareness is the greatest challenge. I have coached hundreds of entrepreneurs in the Caribbean who do not have a clue about IPv6 but want e-commerce websites, apps, and other integrated software to remain competitive in the digital landscape. It is rare to find any awareness of IPv6. I would imagine the same is true for developed nations.

I think in a more mobile driven world, funding and institutional execution partners should be the Universal service fund and their partners in the countries where the calls terminate.

If you could improve any aspect of the ARIN AC, what would it be?

I have observed the AC for the past 6 years and was able to interact with them at ARIN 39. As an outsider, I think that the AC is a carefully selected and objective group. I loved the idea of shepherds for individual policies. I do not have any suggestions for improvements.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I was Executive Director of ICT4D Jamaica for 3 years and at that time I was involved in various multi-stakeholder committees. I have also sat on the National ICT Advisory Committee advising the then Minister of STEM. I have also had the pleasure of supporting entrepreneurs across the Caribbean via the Branson Centre of Entrepreneurship (a Virgin Unite/Virgin Group Initiative) I currently sit on the Board for an NGO that has for the last 2 years been introducing visual coding to Primary School students.

Although my experience is varied the common thread is advocacy and offering advice.

Leif Sawyer



General Communication, Inc.

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I've been working with IP networking since 1993, with areas of focus in IPv4 and IPv6 deployment strategy, network and security architecture, VOIP infrastructure, and network management automation. My current position is Enterprise Security Architect, encompassing skills from all of my previous areas of work. Additionally, I act as the lead IP addressing architect for my company, and sole ARIN representative, secondary assignments which I have held for over 10 years. I've held a position on the ARIN Advisory Council for the past three years, working on multiple policies that have helped multiple segments of the community.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I have no conflicts of interest.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

I have no limitations on my ability to attend ARIN's in-region meetings, nor any out-of-region meetings. My company has encouraged me to pursue reelection and continue working with the ARIN advisory council.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended every ARIN meeting since becoming elected, and a large number of them since becoming my company's member representative. Interacting with various people in the industry has been most helpful, as it provides a much wider point of view than the scope restricted by my

company's geographical challenges.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

There is a lot of clean-up needed within the NRPM, both in terms of pruning non-functional policy, but also in terms of cleaning up language such that it is more accessible to ARIN's membership. ARIN will continue being relevant, even after the last IPv4 addresses are removed from the network, and the policy will continue to need to be modified to meet the goals of that future.

What differentiates you as a candidate or makes you uniquely suited to the post?

My experience in the industry since 1993 has been a combination of extremely rural to urban. The unique geographical challenges in remote Alaska have provided much insight into bootstrapping communities onto the internet and the difficulties in getting IP addressing allocated for such small, disparate locations. As such, I've been involved in the policy process directly, prior to joining the Advisory Council.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

30 years in the theatre has given me many tools - the act of becoming a different character on stage changes what and how you think, separating self from character. That same skill allows me to separate my own opinions from others, and helps me listen to others' viewpoints and needs critically.

As far as policy, Section 4 probably needs the most attention, as it still approaches the allocation process from a pre-runout standpoint.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Legacy spaceholders were provide IP space for the promotion of the internet as a public good. But there should be a balance between good-faith return of unused space and protecting business assets.

What are your thoughts on needs-based justification for the receipt of IP addresses?

As we're in a post-IPv4-runout world, needs-based justification becomes increasingly important - otherwise the economic reality of "banking away addresses" forces smaller players out of the field.

For IPv6? It's much less of an issue - and in fact, there may be a bit of backlash, in that the same mindset of conservation and needs-based-allocation works detrimentally against adoption. So there needs to be a good educational aspect to assignment and delivery of IPv6 addresses, in order to promote the adoption and quicker movement away from IPv4.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

WHOIS data- LEA vs privacy: ARIN's greatest challenge is likely to be finding the balance between the providing relevant information to the community and law enforcement, and protecting the privacy of individuals. Additionally, the clean-up of outdated and incorrect data will likely prove to be even more difficult.

If you could improve any aspect of the ARIN AC, what would it be?

The ARIN AC could use more diversity - there are no council members from the Caribbean membership, as such their voices are not heard. This is an important change that the AC has actively been

working on, and will hopefully continue to do so with or without me.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

My previous three years on the advisory council is the most similar experience i've had, and I'm looking forward to growing it. That said, as the primary security architect at my company, my job is to attend project meetings, listen, analyze, and advise stakeholders how to best move forward while keeping true to corporate and industry standards and best-practices.

Chris Tacit



I am the Founder of Tacit Law, a boutique law firm located in Ottawa, Canada. Tacit Law does not hold any numbering resources.

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

I believe that I would add substantial value if I were elected to the ARIN Advisory Council because of my relevant education, experience and skills. I also believe that I have already demonstrated the ability to assist the ARIN AC and broader community to reach consensus with contributions I have made to the ARIN policy development process during my current term on the AC.

My educational background includes earning electrical engineering, law and graduate business degrees. I am also a licensed professional engineer (1983, Ontario), a member of the Law Societies of Upper Canada (Ontario) (1989), Alberta (2005), Nunavut (2009) and the Northwest Territories (2009), as well as a Canadian Trade-Mark Agent (1991).

My professional experience includes 36 years in the technology and communications fields, including over 28 years as a lawyer and consultant in these industries. During this time, I have had a considerable impact on the development of Canadian communications and Internet, law and policy. A significant focus of my career has been the promotion of competition, dynamic change and growth in the communications, Internet and technology sectors. I also have over 23 years of experience in representing and working with not-for-profit organizations.

Major highlights of my career include holding engineering and management positions with two large telecommunications companies, holding a senior executive role in a publicly-traded company, being a partner in a law firm in which I headed two practice groups and was the firm's representative on an association involving a number of Canadian and US law firms, as well as founding and managing my own boutique law firm. Articles that I have authored and co-authored have been published and I have also lectured in university and community college settings. I am also a board member and corporate secretary of the Vancouver Internet Exchange, and am chair of the board of a business corporation operating in the green transportation sector.

One of my particular strengths is forging consensus within industry associations with regard to policy issues. In addition to providing legal advice, I also have a reputation as a sound business adviser and strategic thinker. Throughout my professional career and volunteering activities in the commercial and not-for-profit sectors, I have continuously emphasized the application and development of good corporate governance principles,

management best practices, technically sound policy proposals and the importance of the human dimension in addressing technical and business issues.

I believe that this background and my demonstrated experience on the ARIN AC make me very well suited to continue contributing to the ARIN policy development process as an AC member.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

There is no conflict of interest that inherently disqualifies me from being a candidate for the ARIN Advisory Council pursuant to the Nomination and Appointment Conflict of Interest List approved by the Board of Trustees of ARIN.

I am a member of the board and corporate secretary of the Vancouver Internet Exchange, which is a Canadian not-for-profit organizations. I also represent clients in the Internet space. I do not believe that any organizations with which I am currently involved or clients that I represent will give rise to any conflict of interest. In the highly unlikely event that a potential or actual conflict to develop with respect to a specific issue, I would recuse myself from any AC discussion of the issue or related voting to which the conflict relates.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

There are no a priori limitations on my ability to attend Advisory Council and Public Policy Meetings or to serve the entirety of a three-year term.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have been attending various ARIN Public Policy Meetings since ARIN XXVI held in Atlanta, Georgia, and have attended every ARIN Public Policy Meeting since being elected to the AC. I have participated in numerous policy discussions and procedures during that time. Since becoming a member of the ARIN AC, I have also authored and shepherded a number of numbering policies.

The most rewarding aspect of my participation in ARIN continues to be seeing the collective knowledge and wisdom of the community expressed through incremental improvements to numbering

policy as a result of the individual contributions of community members and corresponding community discussion.

During the time that I have been attending ARIN Public Policy Meetings, I have found the meetings to be run very efficiently and effectively. I do not see the need for any specific changes at this time.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

I do not see ARIN's core function (i.e., as an RIR) changing in the wake of IPv4 exhaustion. I also do not see ARIN's scale changing in the very near future given the significant activity taking place in the transfer market, which may continue for a few more years until IPv6 deployment becomes ubiquitous in the ARIN region. However, once that does occur and transfer activity subsides, it is likely that ARIN's scale will be reduced. IPv4 exhaustion has led to ARIN's role shifting from predominantly approving allocations/assignments to predominantly approving transfers. The focus on transfers is also likely to continue until IPv6 deployment becomes ubiquitous in the ARIN region.

What differentiates you as a candidate or makes you uniquely suited to the post?

The combination of educational qualifications and experience as an electrical engineer, business person and lawyer that I possess has equipped me with the skills required to assess policy proposals from a holistic, interdisciplinary perspective and to be very precise in any review of the wording of such proposals. My extensive professional experience has also equipped me with the interpersonal and consensus building skills that are essential to shepherding policy proposals and dealing with the technical, practical and human elements of policy development processes.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

As a lawyer, I have had extensive training and practice separating my own views from those of organizations I represent or with which I am affiliated. Accordingly, I do not see this as being an issue insofar as my participation on the AC is concerned.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I think that the rights and responsibilities of legacy IP holders as currently described on the ARIN website (<https://www.arin.net/resources/legacy/services.html>) continue to be appropriate at this time.

What are your thoughts on needs-based justification for the receipt of IP addresses?

Although ARIN is a private corporation, its role in distributing numbering resources equitably throughout its serving territory is a function that serves society as a whole in that territory. Accordingly, needs-based justification for the receipt of IP addresses continues to be generally appropriate.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

In my view, ARIN's greatest challenges are: (1) to strike an appropriate balance among needs-based transfer policy, incentives that exist to simplify transfer policy and the different approaches to transfer policy that exist among the five RIRs; (2) a continuation of extensive simplification of the NRPM given the nature of the PDP which tends to promote change in small and successive increments; and (3) adapting to new scale and role requirements when IPv6 does eventually become ubiquitous in the ARIN region.

If you could improve any aspect of the ARIN AC, what would it be?

I am of the view that the ARIN AC performs very well at the present time. A lot of that has to do with the thoughtful and collegial AC members with whom I have the pleasure of serving, the excellent leadership provided by our current Chair and Vice-Chair, and the terrific support and guidance we obtain from ARIN staff and external counsel. I do not see the need for any specific improvements at this time.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

I am a current member of the ARIN AC.

In addition, in my role as a practicing lawyer, I advise clients on policy and other matters, often with input from other members of my law firm and/or other client advisers.

Alicia Trotman



The Telecommunications Unit, Government of Barbados

The Internet Society Barbados Chapter
<https://noahbarbados.wordpress.com/executive-committee/>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

TECHNICAL SUMMARY:

Advanced expertise in Telecommunications regulations with specific focus on small island developing states Accomplished and effective Telecommunications professional with over a decade of expertise

in providing ICT development, regulatory and monitoring policies ;mechanisms to promote and maintain a competitive Telecommunications environment Expertise and trusted advisor in developing programs to promote cyber security awareness, with special interest and experience in youth programs

Skilled in developing policies and best practices to increase an organization's security consciousness Exceptional results in learning new skills and managing various projects Proven ability to work as part of a team of professionals delivering quality service to enhance organizational net worth and meeting customer's expectations.

PRINCIPAL AREAS OF EXPERTISE:

- Telecommunications Regulations
- Spectrum Management
- Interference Mitigation
- Data Privacy and Protection Policy
- Internet Governance
- Domain Name Administration
- Girls In ICT Development
- IXP Development
- Cyber Security Awareness
- Cyber Bullying Awareness
- Incident Response Team Development

PROFESSIONAL EXPERIENCE:

SECTOR: TELECOMMUNICATIONS
BARBADOS

TELECOMMUNICATIONS OFFICER/ TELECOMMUNICATIONS UNIT (APRIL 2007- PRESENT)

Responsible for overseeing the acquisition, installation of implementation of a new spectrum management, monitoring and licensing systems. This automated spectrum management system utilizes both hardware and software components to optimize the spectrum management function.

Technical lead in conducting spectrum audits, spectrum planning and investigation of interference complaints

Conducting frequency monitoring and EMC analysis, on submitted spectrum license applications; recommending spectrum allocation and base station positioning

Responsible for the administration of the ccTLD “.bb” and the maintenance of the Database.

Managed the team in the Establishment of the Barbados Internet Exchange Point(IXP); including technical and legal aspects Project leader in the Establishment of a National Computer Incident Response Team (CIRT)

Technical lead on the National Cyber Security Strategy

Conduct Stakeholder Legislation meetings : Data Privacy and Protection, Unlawful Interception of Transmission Produce drafting instructions for Telecommunication Legislation

Prepare weekly reports on status of projects and other assigned deliverables

Liaise with vendors and contractors on solutions to meet network administration requirements

Review and comment on request for proposals (RFP) for major government ICT projects

Organize “Girls in ICT Day”, as well as “World Telecommunications and Information Society Day” Activities

Create cyber security awareness campaigns and online safety education programs for children and parents, administered within the primary and secondary schools as well as popular cultural events.

RADIO FREQUENCY TECHNICIAN, FIELD ENGINEER/ CINGULAR WIRELESS (FEB 2005 – SEPT 2006)
BARBADOS

Responsible for all procedures to operate and maintain a GSM cellular network (cell sites and transmission).

Performed BSC Technician’s duties as required

Assist in responding to and resolving customer related system problems (trouble tickets).

Responsible for the maintenance of all power equipment (batteries, rectifiers, generators, etc.), to ensure optimum performance.

TELECOMMUNICATIONS OFFICER/ TELECOMMUNICATIONS UNIT (SEPT 2003- FEB 2005) BARBADOS
Investigating interference complaints, reviewed applications by companies on issues such as licenses, spectrum allocation and base station positioning.

Monitoring of Frequency spectrum to ensure there was no unauthorized usage

Inspection of several business and private properties for illegal equipment or misuse of equipment

Created numerous Government Policies, which were distributed to the public to ensure compliance with the Telecommunications regulations of Barbados

EDUCATION:

Master of Science Degree in Mobile Personal and Satellite Communication – University of Westminster (London)

Bachelor of Science Degree in Electronics with Computer Science (with Honors) –University of The West Indies(Barbados)

Six components of the Ordinary Technicians Diploma (OTD) in Mechanical and Electrical Engineering: Mathematics, Engineering Drawing and Design, Electrical Engineering Principles, Power Production, Measurement and Instrumentation, Electronics and Systems.(Barbados Community College)

PROFESSIONAL TRAINING:

Spectrocan: AFMS(Automated Frequency Management System) General Administration, Spectrum Management Principles, Revenue Tracking, Frequency Planning, Spectrum Surveillance, Radio Equipment Dealer, Radio Station Licensing, Technical Analysis, Interference Mitigation, Broadcast Stations, Radiation, EMC Analysis

United States Telecommunications Training Institute (USTTI):
Radio Spectrum Monitoring Techniques and Procedures

Laboratory Techniques in Support of Equipment Authorization Programs
Internet Security
Cybersecurity and ICT Policy
American Registry for Internet Numbers (ARIN): IPv4-IPv6 Transition

National Telecommunications and Information Administration (NTIA) : Radio Frequency Spectrum Management

Beijing University of Post and Telecommunications: New Technologies of Mobile Communications and Its Applications

French Agence Nationale des fréquences (ANFR): Spectrum Management TCI: Spectrum Management and Spectrum Monitoring Systems training -Engineering analysis tools, maintenance of the automated spectrum management system, creation of reports using Crystal Reports. Monitoring activities using Scorpio Client Software. Factory Acceptance Testing: Testing and final approval of the Automated Spectrum Management and Monitoring Systems International Telecommunications Union (ITU):

Cyber security and the establishment of national CIRTS

Cyber Security Drills

Organization of American States (OAS) :

Cyber Security Policies.

Incident Response and Security Teams

Internet Society (ISOC): Internet governance & policy

PROFESSIONAL AFFILIATIONS:

Member of the Internet Society – Global, Barbados Chapter

Executive committee member Barbados IGF 2017

One of the founding members and Secretary of NOAH: No! to Online Abuse and Harassment. A local Charity established to provide resources to victims of online bullying, stalking, revenge pornography or any other forms of cyber harassment: www.noahbarbados.wordpress.com

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

No conflicts of Interest.

Describe any limitations on your ability to attend Advisory Council and Public Policy Meetings in person or to serve the entirety of a three-year term.

No limitations.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

Yes, I have attended two Arin meetings, most rewarding was the ability to network and gain knowledge from other professionals in various fields within the internet ecosystem. It may seem that

within our own countries we have unique issues, however in discussion it is apparent you are not alone and one learns from the experience others have had solving similar issues.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

In the wake of IPv4 exhaustion, ARIN has the continued responsibility to carefully review and assign any new IPv4 request as stipulated by its policies to ensure smooth transition. In addition, there is increased demand for the education of end users on the impact of IPv4 depletion, this is necessary to ensure Network Operators receive pressure from within their network to deploy IPv6. Arin must also continue to form alliances with regional NGOs, private sector groups and governments to lead by example in the deployment of IPv6. Strict auditing is needed to reclaim unused IPv4 addresses, maybe incentive programs can be introduced to relinquish IPv4 addresses and adopt IPv6 addresses.

What differentiates you as a candidate or makes you uniquely suited to the post?

Having worked over ten years in a regulatory role, I understand the necessity to drive positive change as well as the importance of bringing stakeholders together to effectively achieve clear objectives. In addition I am well acquainted with the role of policy creation and implementation. The Caribbean Information and Communications Technology (ICT) space is quite intimate, I am a very familiar face to other regional regulators, service providers, and organisations such as the Caribbean Telecommunications Union (CTU) to name a few. I also have an excellent working relationship with regional representatives from organisations such as the Internet Society. This coming September I am enrolled in a training program " Spanish as a foreign language for public officers", this will improve my communication skills within the region. Lastly due to my immigration status, I am also able to live and work within the United States if required.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

If selected as a member of the ARIN team, I would be committed to higher ethical standards adhering to ARIN's objectives and procedures. I would value my duty to provide advice which is objective, independent and impartial. In addition I would ensure a commitment to honesty, fair and respectful engagement with the community. The policy area which needs more attention is the management and administration of the WHOIS database. The implications of these policy decisions to impact on

Law enforcement agencies tackling cyber-crime as well as the impact on end-user privacy and the trust between ARIN and network operators to provide accurate and up-to-date information makes for a very complicated issue.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Legacy IP Address holders have the right to practice self-governance over the addresses assigned to them, however with rights comes responsibilities. Legacy IP address holders must be careful not to be seduced by the lure of financial gain to reassign "sell" or lease their IP addresses to criminal entities who may offer large sums of cash. It is a good initiative to have an option for Legacy IP address holders sign a LRSA (Legacy Registration Services Agreement) with ARIN, this exhibits a level of trust and cooperation.

What are your thoughts on needs-based justification for the receipt of IP addresses?

Needs-Based justification is the best approach for allocation of a very scarce resource such as IPv4 addresses. Due to its depletion one should have to give a compelling reason to acquire this resource. However when taking into account the sheer magnitude of the IPv6 address space, a needs based justification is not required, at least at this time, who knows what the future holds.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

Arin's greatest challenge is the IPv4 to IPv6 transition. Even though the IPv4 address space in Arin has been depleted and there is a needs based assessment and waiting list process for new IPv4 applicants, adoption is still slow. If we examine the Caribbean space, this slow adoption is due partly to Network Operators still possessing a reserve of IPv4 addresses, unless Arin is assisted by Governments to legislate as well as other Network Operator groups to educate the community regarding the adoption of IPv6, then this will continue to be a major challenge. In addition to this Arin also has the mammoth task of keep its growing WHOIS database up-to-date and accurate.

If you could improve any aspect of the ARIN AC, what would it be?

To ensure full and diverse representation from all groups served by ARIN, I would recommend that provisions be made for one seat on the ARIN Advisory Council be held by a Caribbean National or person having a long working career within the Caribbean region.

The role of the Advisory Council is to advise

the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

Being a member of the Telecommunications Regulator, one of the duties include advising high level government officials on Regulatory and legislative policy decisions.

Chris Woodfield



Current member of ARIN Advisory Council and ARIN Fellowship Committee
NANOG Program Committee member
Salesforce.com, Inc.
<https://twitter.com/cwoodfield>
<https://www.linkedin.com/in/cwoodfield/>

Please provide a brief CV highlighting experience relevant to the duties of the ARIN Advisory Council.

Principal Network Engineer, Salesforce - 2016-present
Researches and designs leading-edge network architectures that focus on on the network edge, content delivery, and global traffic management.

Senior Staff Network Engineer, Twitter - 2011-present
Led Twitter's edge architecture and global traffic distribution strategies, with additional work on datacenter design and

Senior Network Engineer - Yahoo! - 2010-2011

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Advisory Council. How do you propose to resolve such conflicts?

I do not foresee my membership with the NANOG Program Committee as a conflict of interest, as the goals of the two organizations appear to be complimentary. I would plan to recuse myself from any decisions where there is an apparent conflict.

My position at Salesforce does involve IP address allocations and planning; I am prepared to pledge not to use any sort of "inside information" (to the extent that this exists; ARIN is commendably a very public organization) in dealings with ARIN or other registries, and if necessary, hand off duties to other engineers should there be unavoidable conflicts of interest.

Describe any limitations on your ability to attend Advisory Council and Public Policy

Meetings in person or to serve the entirety of a three-year term.

I have no current limitations on my ability to attend meetings or to serve a full three-year term on the AC. If any limitations would come up during my term, I would disclose them promptly and resign from the AC if such limitations prohibit me from effectively carrying out the duties of the seat.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended multiple ARIN meetings, both individually and in my capacity as a current AC member, and am similarly active on the PPML. In these meetings and mailing list interactions, I've found the ability to learn a great deal about the policy goals and thought behind various proposals and existing policies, not just from presentations and public Q&A, but also from private conversations with various AC members, directors, and members of the community. The PPML provides a similar source of information, exchange of opinions, and in-depth exposure to issues that the community encounters with the current NRPM and guides potential improvements that could be codified into policy.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

I see several subtle, but substantial changes:

1. ARIN's role as an IPv6 evangelist is now more important than ever. I see ARIN as being in a unique position of having visibility of the state of the regional IPv4 exchange market in full, and as such can release relevant data to help drive the IPv6 transition along. While ARIN has no hand in the commercial side of the exchange market, I see no barrier for ARIN to report on transfer activity, and to research and report on pricing trends for transferred IPv4 space.
2. A number of IPv4-specific policies have changed and will continue to change as ARIN transitions from the role of a steward of unallocated IPv4 space to that of a de facto regulator of the regional IPv4 transfer market. The primary goal of that stewardship should be avoiding, where possible, the artificial scarcity of IP addresses on the transfer market, with a secondary goal of ensuring the integrity of the allocation database. Often these two goals can be in conflict; and as such, balancing the two will be a difficult problem to solve. I look forward to helping ARIN with that effort.

3. Over time, IPv4 specific policies will need to be unified as much as possible with IPv6 policy in order to simplify the NRP. There have been several proposals to accomplish this, none of which to date have gained community support. I anticipate continuing work with the community and other AC members to continue this

What differentiates you as a candidate or makes you uniquely suited to the post?

With nearly 20 years of experience in this industry, I've been working in a number of engineering roles where IP allocation planning and policy come into play. In these roles, I've ensured that care is taken (even when allocating private space) to ensure that allocations are not overly generous while ensuring that when allocations are available, sufficient allocations are given to meet business needs.

I've served on both sides of the fence, working in the ISP business where I was required to evaluate requests from customers for assignments, and on the application service provider side, as a requestor of IP address and ASN resources. In addition, I've worked on IPv6 address plans at multiple companies, and as such I believe my experience with IPv6 makes me well suited to evaluate further policy recommendations.

How do you separate your personal opinions from those of your organization and those of the community? What areas of policy, if any, need more attention and why?

If elected, I would make clear that I have a duty to the ARIN AC to work in an individual capacity, not as a representative of my employer. I would actively push back against any pressure to do otherwise where I believe that the interests of my employer to do not align with my beliefs on ARIN policy. As an AC member, my primary duty is to the community, which is much larger than a single person, and to the policies, not the people behind them, despite potential personal conflicts. I aim to be a faithful representative of the community's goals.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I would expect that we continue to encourage legacy holders to sign LRSA agreements, to the extent that we are able; I think we should encourage larger legacy holders (or allow the transfer market to provide such encouragement) to find ways to use their space efficiently and redistribute unused portions. We're already seeing this from a number of legacy holders, which is excellent progress. At the same time, while ARIN has no influence on routing policy, we should be mindful of the potential impact of the transfer market, and the inevitable

disaggregation resulting from transfers, on the size of the global routing table.

What are your thoughts on needs-based justification for the receipt of IP addresses?

We must strike a balance between responsibilities to ensure the stability of the transfer market. In particular, we must write policy which prevents opportunistic market manipulation, while serving the community to ensure that organizations are able to get the space they need. This is a delicate balance that must be maintained, and it's apparent that various RIRs have taken substantially different approaches to this, leading to loopholes and potential market arbitrage. I believe that RIRs should have common policies, as much as is practical given differences in various regions' needs, and that we should react to evidence of market manipulation when it arises.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

I believe that the transition of ARIN's role in IPv4 allocations from steward of a held resource (i.e. allocating space from the free pools) to a registry of IPv4 transfers has something of an identity crisis among RIRs. RIRs are adopting divergent policies for transfers, creating loopholes and opportunities for arbitrage, which at some point should be reconciled.

The number of invalid/inaccurate records in the WHOIS database also represents a need for ARIN to adapt to increased scrutiny of these records. Both the network security community and law enforcement agencies have expressed the strong desire for ARIN to take a more active role in ensuring the accuracy of WHOIS, and potentially take punitive measures against holders of resources with invalid POC data attached. Law enforcement's interest, in particular, carries the implied threat of legislation to force the issue if we cannot resolve this issue independently.

If you could improve any aspect of the ARIN AC, what would it be?

While it may seem that the community-drive policy process of the ARIN AC is built on very subjective concepts of consensus and community support, I'm surprised and impressed by how often this results in sound policies and as a result, high satisfaction from the community with how ARIN performs its duties.

I hope that this model continues to stand the test of time. I would very much like to see the AC encourage ARIN take a more active role in transitioning legacy holders to LRSA signatories, and make further outreach to encourage holders of large legacy blocks to move unused space either back to ARIN or

to the transfer market, thus improving the supply of scarce IPv4 number resources. To the extent that this can be helped along by policy, I'm happy to support the goal.

The role of the Advisory Council is to advise the ARIN Board of Trustees on Internet number resource policy and related matters. Describe a similar experience you have had in such an advisory role.

As an Advisory Council member, admittedly with a short tenure to date, I've learned much more about the deliberative process that guides ARIN policy, as well as current issues facing the IANA community as a whole. I hope to continue my work on the AC, building on this experience to further guide policy to ensure ARIN remains a responsive, trusted steward of address resources. In addition, I service on the ARIN Fellowship Committee, working to select the most promising Fellowship candidates and helping ensure their experience benefits both themselves and the ARIN community.

I am also currently serving on the NANOG Program Committee, where we decide on program agendas for the NANOG conference, and in the course of doing so, help guide policies for program acceptance criteria, including desired subject matter, presentation standards, and other details.

At various companies, I have served on cross-functional organizational committees that have sought to provide input on technical matters outside my direct area of experience, helping to coordinate technical efforts and ensure the success of large product and infrastructure initiatives.



2017

Board of Trustees

Dan Alexander



Principal engineer for Comcast Cable LLC
Chair of ARIN Advisory Council
Chair of Geo Working Group for the Streaming Video Alliance
<https://www.linkedin.com/in/dan-alexander-3b71892/>

Please provide a brief CV highlighting experience relevant to the duties of the Board of Trustees of ARIN.

For fifteen years, I have been advocating a bottoms-up model of Internet governance and pushing for the deployment of IPv6. This work has been successful in helping one of the largest ISPs to become a leader in IPv6 deployment, and provided me with valuable experience with the Internet Registry system. As an engineer for a large corporation, and a previous small business owner, I have tried to maintain a pragmatic, no-nonsense approach to problem solving.

This approach has served me well as I have worked with other RIRs, attended ICANN meetings, and participated on the ITU's IPv6 Working Group. Having also been elected to the ARIN Advisory Council five times, including serving as the Chair of the AC for three years, I have been able to work across a wide range of issues from very local to global in scope. As I complete my work on the AC,

and do not intend to run for re-election, I would like to continue to serve the community on the Board of Trustees.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Board of Trustees. How do you propose to resolve such conflicts?

I am not aware of any conflicts of interest in my ability to serve as a member of the ARIN Board.

Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the full three-year term.

There are no limitations on my ability to attend Board and Public Policy Meetings in person or to serve the full three-year term.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have been attending ARIN meetings since 2002 and have participated in all aspects of the policy development process as a community member, policy author, Advisory Council member, and Advisory Council Chair. Aside from policy, I have been involved in ARIN elections, IP resource applications, account management, IP resource transfers, and whois management at an operational and engineering level.

The most rewarding aspect is the experience gained working with a member-based organization. The focus on transparency and inclusion has influenced my approach to problem solving. The opportunity for improvement is a continued effort to expand that inclusion to a more diverse set of involved organizations and individuals.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

ARIN's greatest challenge is its ability to adapt to the increasing monetary value of IPv4 address space, an Internet transitioning to IPv6, and a governance model that includes the transition of the NTIA IANA function. The Board needs to continue adjusting their strategic plans to help the organization adapt to this new environment.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

ARIN's role in the management of IPv4 address space takes on even greater importance in the wake of free pool exhaustion. Fraud prevention, validating registration claims, and data accuracy are much more important roles in a scenario where IPv4 address space is being transferred for money, and increased attempts are being made to hijack registrations.

What are your thoughts on needs-based justification for the receipt of IP addresses?

"Needs-based justification" means different things to different people. Opinions can range from validating who is making a request, all the way to reviewing intimate details on the usage of each IP address. I feel that validating requests, preventing fraud, and improving data accuracy are more important aspects of reviewing resource requests, than judging how address space is being utilized.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I believe that all IP resource holders share a responsibility in maintaining a system that benefits the Internet as a whole. It is not practical to think that a particular resource holder should be able to benefit from a system while maintaining no responsibility or accountability to the system that provides the benefits. All resource holders should have a core set of responsibilities, regardless of when they were provided a block of IP address space.

ARIN does a measure of outreach and capacity building. Is this something that should be expanded, contracted, or maintained as is? In particular, much of this outreach and education has been centered around the transition from IPv4 to IPv6. Should that emphasis continue or are there other areas or topics that you feel should be prioritized?

ARIN outreach will need to evolve more than expand or contract. IPv4 transfers are increasing, IPv6 usage is increasing, and the transition of the IANA function has occurred. The outreach audience and

subject matter needs to evolve to serve a new set of requirements.

Please describe your Board Governance (or similar) experience.

I have served as Chair of the 15 member ARIN Advisory Council for three years.

Nancy Carter



CANARIE Inc. – Canada’s National Research and Education Network

<https://twitter.com/1carter>
<http://www.nancycarter.ca>

Please provide a brief CV highlighting experience relevant to the duties of the Board of Trustees of ARIN.

The skills that I would bring to the Board of Trustees of ARIN include executive not-for-profit leadership, finance, program delivery, governance and legal. I have worked in the not for profit, research and education space for 20 years, with considerable international participation. I am the Chief Financial Officer at CANARIE: CANARIE operates and evolves the national backbone of Canada’s ultra-high-speed National Research and Education Network (NREN), connecting to 12 provincial and territorial partner networks. This world-class 100 gigabit per second network is critical infrastructure supporting today’s data-intensive, globally collaborative research. I currently serve on the Internet Society Canada Chapter Board, and as the Treasurer.

In my role as CFO at CANARIE, I am responsible for the financial integrity and operations of the organization, which includes the management and administration of CANARIE’s funding and program delivery; human resources; IT management; and all legal and contracting.

I am a life-long learner. Concurrently with my role as full-time CFO at CANARIE, I attended law school part-time at the University of Ottawa where I earned my J.D., with a Law and Technology specialization, in 2012. My major paper was entitled The Internet as Essential Infrastructure: A Canadian Perspective. It is available on the CANARIE website: <http://www.canarie.ca/about-us/documents/?wpdmc=corporate-publications>.

I would bring a wealth of Internet experience and knowledge of the digital infrastructure ecosystem to the Board of Trustees. During my tenure at CANARIE, I played a key part in the incorporation of the first iteration of the Internet Society Canada,

supported the incubation of CIRA, managed the evolution of the governance of CANARIE, and participated in CEO selection committees. I participate at all CANARIE Board and sub-committee meetings, and fulfill the role of Board Secretary. My role as the CFO of CANARIE has exposed me to the technical aspects of networking as it relates to research and education. I currently sit on, and in some cases chair, international committees that are working to evolve global network architecture policies and strategy. These committees work to evolve the services delivered to the worldwide research and education community. I have been on the Board of the Internet Society Canada Chapter (ISCC) for the past four years, currently serve as Treasurer and also as Vice-President of the Board. I have worked diligently with the Board to secure sustainable funding for the Chapter. Participation on the ISCC Board represents my commitment to the ISOC vision that the Internet is for everyone.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN’s Board of Trustees. How do you propose to resolve such conflicts?

I have no conflicts of interest.

Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the full three-year term.

No limitations. Based on the current meeting schedule and board rhythm, there is no conflict, this would only change if meeting dates overlapped with CANARIE Board meetings.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I attended ARIN 39 as a fellow, a learning opportunity that I sought out to further advance my knowledge of Internet governance, and ARIN 39 completely exceeded my expectations. My interest was piqued by the governance of ARIN itself; I have spent months learning more about it and I am thrilled to have been nominated for the Board of Trustees. I look forward to participating in ARIN 40 and taking a more active role in future with the varied ARIN communities, and having a voice with its many diverse audiences. The most rewarding aspect of attending ARIN 39 was the sense of inclusion that I experienced, and the community engagement that I engaged in for the entirety of ARIN 39. I felt welcomed by ARIN staff, by Trustees and Advisory Council members, and the other fellows and meeting attendees.

I was able to chat with ARIN staff about suggestions while at ARIN 39; some of which have been acted upon! My suggestion for improving the fellowship experience would be to include a day of onboarding for fellows, or a webinar or two in advance of the meeting, which would be extremely useful to cut back on the "drinking from the firehose" effect of attending a first ARIN meeting. That said, the fellowship program is a great opportunity to expose new ideas and new people to ARIN and vice versa.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

The key challenge for any non-profit member-based organization is ongoing relevance to and engagement with the community it serves. The transition to IPv6 has been slow; yet it is essential for IPv6 to be more broadly used by the ARIN community. The need for promotion of IPv6 is a constant challenge that involves a massive technical and cultural change in the Internet community. As a key player in the research and education community, I hope to champion this cause. ARIN must continue to advocate through community outreach for greater IPv6 adoption.

Maintaining the Whois registry and improving Whois registry accuracy are both additional challenges that must be addressed.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

My 20-year experience in helping ensure CANARIE's relevancy to the community would help in ensuring that the relevance of ARIN grows in the face of IPv4 exhaustion.

There is clearly still a role to be played in the management of IPv4 resources, even though the resource has been exhausted. As it pertains to IPv4, ARIN will need to maintain and ensure registry accuracy and process transfer requests. Facilitating the IPv4 transfer process is cumbersome at times. The policy work related to IPv4 may continue, by necessity, as the transfer market evolves in the ARIN region.

ARIN will continue to play an important role in ensuring adoption of IPv6 through education and awareness building. Automating and streamlining engagement with customers will be required. Whether IPv4 exhaustion impacts the function or scale of ARIN will, for the most part, be determined by the rate of IPv6 adoption that is experienced. Faster adoption could lead to a reduced role for ARIN, however maintaining the Whois registry will become even more important.

What are your thoughts on needs-based

justification for the receipt of IP addresses?

With the existence of the IPv4 and the transfer market, there is a balance that must be struck between traditional justification of operational need for IP addresses and recognizing that a network operator's willingness to purchase IPv4 resources on the transfer market is demonstrative of need in and of itself. However it is important to ensure IP addresses do not become an investment mechanism as they are a fixed resource of critical importance to new entrants and small organizations.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Legacy IP address holders who were granted blocks of IP addresses before ARIN came into existence do not have any obligations to ARIN and are not subject to the registration services agreement (RSA). ARIN doesn't interfere with legacy holders, and in my opinion, rightly so.

If a legacy IP address holder wants to take advantage of ARIN services that have become available since 1997, they are able to sign a Legacy Registration Services Agreement, which allows them to take advantage of ARIN services, but still does not affect their stewardship of a legacy block.

However, we are coming up against issues related to registry accuracy. There is some misinformation out there surrounding legacy holders' ability to update their Points of Contact and organization information in Whois. Many believe that legacy holders can't update their information without entering into an agreement with ARIN. This is not the case, and I would recommend a campaign to reach out to legacy holders to explain this.

ARIN does a measure of outreach and capacity building. Is this something that should be expanded, contracted, or maintained as is? In particular, much of this outreach and education has been centered around the transition from IPv4 to IPv6. Should that emphasis continue or are there other areas or topics that you feel should be prioritized?

ARIN has been doing some very creative outreach and capacity building. Social media is currently very engaging and educational content has been developed over the last few years that should impact IPv6 adoption and community involvement. In order to answer this question properly, it would be useful to understand what the engagement metrics are, for example, what the cost per video view is, what the acquisition cost per attendee at an ARIN on the Road is, and how or if that has a direct impact on IPv6 adoption. What do user surveys tell us about the new ARIN Online? What was the baseline and what is

the target for user experience? Is there an outreach dashboard to help answer the questions above in a quantitative way?

In terms of the focus of the outreach and education, these activities seem to align with the ARIN strategic direction for 2017-18, unless community consultation radically changes the strategic direction then these outreach activities support the goals and principles set out in the Strategic Plan.

In light of a decreasing need for IPv6 adoption education over time, perhaps the outreach and education resources could be marshalled and directed towards educating our legacy IP address holders on their rights and responsibilities.

Please describe your Board Governance (or similar) experience.

I have served as Treasurer on a number of boards: six years on a Tall Ship Sail Training organization, six years (and counting) on a condominium board, and four years (and counting) on the Internet Society Canada Chapter board as described previously. As the executive responsible for supporting the CANARIE board, I understand and ensure best practices and board responsibility, evolution, and accountability. I would bring unique governance and financial expertise and a fresh perspective to the ARIN Board of Trustees.

I have been involved with many not-for-profit community organizations over the last three decades, which has given me an understanding of how community organizations can evolve and maintain relevancy.

Leslie Daigle



Principal, Thinking Cat Enterprises.

<http://web.thinkingcat.com/wordpress/lesliedaigle/>

Please provide a brief CV highlighting experience relevant to the duties of the Board of Trustees of ARIN.

I have been working with Internet technologies for more than 25 years, and have spent many of them involved with Internet-related not-for-profit organizations. The three key aspects of my experience that I think are pertinent to the ARIN Board position are:

- + Extensive Internet institution leadership experience: I was an Internet Architecture Board member for 7 years, elected Chair of it for 5 of those years, leading the IETF through significant administrative changes. I am currently the Chair of the IETF Administrative Oversight Committee (IAOC, the IETF's board for financial and administrative functions).
- + Concrete experience with Internet-scale technology evolution: while I was the Internet Society's Chief Internet Technology Officer, my team developed the plan for and implemented the World IPv6 Day and Launch events that had a significant positive impact on IPv6 deployment. Currently, my own organization is advocating for progress on routing security requirements and practices that suit operator requirements and practical implementation.
- + Firm believer in the power of consensus and Internet community efforts

Many of those examples come from volunteer work done within the context of my "day job" employment. I started my Internet technology career at Bunyip Information Systems (founded by the creators of Archie, the Internet's first search engine) in Montreal, Canada. I moved to the US in 2001 to join Verisign as Director of Directory Research. I was a Consulting Engineer at Cisco Systems from 2005 to 2007. I then joined the Internet Society as its first ever "Chief Internet Technology Officer", where I built up technology outreach programs for the Internet Society until 2014. For the last three years, I have been focused on consulting and developing innovative approaches to collaborative Internet

development – TechArk, a "centre for the creative development of the Internet", with funded projects focusing on improving the Internet through collaborative industry activities.

Full details, including publications and other positions, are available here: <http://web.thinkingcat.com/wordpress/lesliedaigle/leslie-daigle-detailed-cv/>.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Board of Trustees. How do you propose to resolve such conflicts?

I have no conflicts as described in the policy.

The closest thing to a potential (perceived) conflict of interest is the fact that I am currently a Trustee of the IETF Trust, which is now responsible for the IANA IPR. I will cease being a Trustee in March 2018, when my term on the IETF IAOC concludes.

Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the full three-year term.

I perceive no limitations at this time.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended an ARIN policy meeting. I have tracked and been aware of discussions within ARIN and on PPML, in the context of IETF leadership roles. I have attended other RIR policy meetings. Community discussions can get tense and they can be challenging to bring to conclusion – but I maintain that the most rewarding thing is always the outcome, and the continued community-based development of policies to manage the global Internet's resources.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

I believe ARIN's greatest challenge is: remaining a viable, community-driven institution in the face of IPv4 runout and the fundamentally different reality of IPv6 allocations. Unpacking that: viability includes financial aspects – does the membership model still work, when IPv6 allocations are large enough that networks don't have to keep coming back for more? Also, finding the right balance to ensure that the community provides direction, without rat-holing or fixating, is a challenge. IPv4 runout still has some challenges left – in the shape of actual and potential legal wranglings. The path to solutions lies in ensuring a positively and constructively engaged community.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

The overall function of ARIN must remain the same stewardship of Internet number resources, through collaborative community processes. ARIN's role will include handling of fallout from IPv4 remnants, trading and legacy space. I think the scope will likely evolve as certification of resources becomes more important to industry. I think there are potential challenges facing ARIN's role given IPv6 allocations are larger, less frequent – membership is less obvious.

What are your thoughts on needs-based justification for the receipt of IP addresses?

I believe needs-based justification is important for all IP address allocations. Although IPv6 space is unfathomably huge, human imagination for its use will no doubt challenge its boundaries :-). With that said, there may be the need to revisit what constitutes adequate need, and the timeframe for needs.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

I respect the rights that holders of legacy IPv4 address have to use the number resources they were assigned. In the spirit of the cooperative network environment in which it was allocated to them, it would be nice to see collaboration with the current Internet community and its processes, when it is no longer required. I appreciate that the real challenge is the legacy space that has migrated into the hands of second and third parties (through bankruptcies, etc), for which there is no community history or relationship, and that remains a challenge.

Ultimately, there just isn't enough IPv4 address space for the world's Internet needs. The right answer is to get everyone focused on deploying and using IPv6 and making IPv4 irrelevant. That might take decades, yet, but it's an important goal.

ARIN does a measure of outreach and capacity building. Is this something that should be expanded, contracted, or maintained as is? In particular, much of this outreach and education has been centered around the transition from IPv4 to IPv6. Should that emphasis continue or are there other areas or topics that you feel should be prioritized?

I believe outreach is a valuable process for building community and maintaining industry awareness which are key to ARIN's onward success. In that light, I think it should continue. Absent a clearer sense of the costs and resources required, I don't have a firm opinion about whether it should be maintained at the current level or expanded.

Please describe your Board Governance (or similar) experience.

I was a member of the Board of Directors of Bunyip Information Systems, during its tumultuous last year of operations. I was a member of the Internet Architecture Board for seven years, and its Chair for 5 of those years. During that time, I worked with the IETF Chair to lead the IETF through a significant administrative restructuring. I have been on the IETF's Administrative Oversight Committee twice – first, as an ex officio member (IAB Chair), and most recently by appointment of the IETF nomcom. I am currently the Chair of the IAOC, and will be stepping down in March 2018. The IAOC provides oversight of the IETF's administrative and financial activities, approving its budget, meeting locations, et cetera.

Stephen Lee



CEO, ArkiTechs Inc
Program Coordinator, CaribNOG (Caribbean Network Operators Group)

<https://twitter.com/stephenolee>
<https://www.linkedin.com/in/stephenolee>

Please provide a brief CV highlighting experience relevant to the duties of the Board of Trustees of ARIN.

I am the CEO of ArkiTechs Inc., an IT provider which I co-founded in 2002. ArkiTechs is headquartered in Florida, but also has an office in the nation of Trinidad & Tobago, and operates across the whole Caribbean region.

Formally trained as an Electrical Engineer, prior to ArkiTechs I served in technical and executive positions at technology companies in Jamaica and the United States. My responsibilities included design, development, deployment and servicing of networks and software systems for multi-national organizations.

For over a decade, I worked as an Advisor with the Caribbean Telecommunications Union (CTU) on infrastructure development and capacity building projects in the Caribbean region. As such, I am a contributor to Caribbean ICT policy development, government network infrastructure design, Internet Exchange Point proliferation, and ICT training programs.

I am one of the founding members of the Caribbean Network Operators Group (CaribNOG), a community of network operators dedicated to sharing technical information and experiences related to the management of ICT infrastructure in the Caribbean region. Since its establishment in 2007, I have served as CaribNOG's Program Coordinator. This role entails identifying community needs, collaborating with stakeholders to align the organization to those needs, and building relationships within the community and with partner institutions.

ARIN has been one of CaribNOG's most important

institutional partners as it fulfills its stewardship mission in the Caribbean region. In that context, I have collaborated with members of the ARIN team on outreach and education initiatives in the Caribbean, and with members of the community at public policy meetings. ARIN and CaribNOG have held two back-to-back meetings, and those have provided me with a unique opportunity to see ARIN's operations up close, and gain a greater appreciation of the work of the organization.

In addition to ARIN events, I regularly participate in regional and international fora, including meetings hosted by LACNIC, LACNOG, NANOG, ISOC, ICANN, CTU and CarPIF (the Caribbean Peering and Interconnection Forum).

WORK EXPERIENCE:

Co-Founder and Lead Engineer - ArkTechs Inc., Florida, US
Responsible for solution design and business development in the areas of IP network infrastructure, application hosting, streaming media and VoIP solutions.

IT Manager - Jamaica National Overseas (USA) Inc., Florida, US
Responsible for overseas IT Department of multi-national financial institution with over 60 branches and agents in the United States, Canada, United Kingdom, Cayman, St. Vincent and Dominica. Provide strategic technology leadership for transaction-based money services business. Design, manage, and optimize servers, business applications and retail network infrastructure.

Manager, Network Division - Management Control Systems Ltd., Kingston, Jamaica Established and managed the Network Division, responsible for design, installation, and servicing of networks for mid to large-sized corporations. Developed network designs and proposals, coordinated infrastructure projects, responded to tenders and managed team members. Initiated and oversaw strategic vendor partnerships.

Please disclose any conflicts of interest you may have with doing your duty as a member of ARIN's Board of Trustees. How do you propose to resolve such conflicts?

Currently, I have no conflicts of interest. Should a conflict arise in the future, I would disclose it to the Board and abide by ARIN's Conflict of Interest policies.

Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the full three-year term.

I have no limitations on my ability to attend meetings or my ability to serve full term.

Have you attended ARIN meetings or otherwise participated in ARIN procedures in the past? What did you find the most rewarding from those meetings or procedures? What suggestions for improvement might you have?

I have attended ARIN meetings over the course of a decade, as well as collaborated in joint regional meetings and training events with related organizations such as the Caribbean Network Operators Group (CaribNOG), the Caribbean Telecommunications Union (CTU), LACNIC, ISOC, and ICANN. What I have found consistently rewarding about ARIN meetings is the opportunity to represent the view of Internet users in a forum where those views directly influence policy regarding the stewardship of global Internet resources and ultimately impact lives. I truly value ARIN's community-driven process (which works!) as it allows end-users to influence the development of a resource as important as the Internet.

Two areas for improvement are:

- (a) Framing of issues in a way that persons less steeped in industry history or the Internet governance process can understand.
- (b) More representation from under-served communities, for example through remote hubs, greater on-the-ground representation, and by taking more issues to the communities in contexts other than the public policy meetings.

What do you believe to be ARIN's greatest challenges? (maximum 150 words)

As the Internet continues to grow, its reach encompasses an increasingly diverse set of people, cultures and structures of life. Around the time of its establishment and in its early years, ARIN would have served a strong, motivated technical community which had a largely common background. Today ARIN's work also affects a community that doesn't have those original motivations or background - one with different (oftentimes less sophisticated) needs, which also faces a more complex, competitive and stratified Internet landscape.

ARIN faces a real challenge in balancing the priorities of its widening member group. For example, while many early members are concerned about legacy IPv4 reclamation, the IPv4 transfer market and IPv6 proliferation, newer members are grappling with issues of gaining access to the Internet and the growth of local Internet economies. Number resources are relevant to all, but they exist at different points on the needs spectrum.

How do you foresee ARIN's function, scale, or role changing in the wake of IPv4 exhaustion?

IPv4 exhaustion signals the curtailing of a significant administrative function in ARIN: address allocation from the free pool. Usage of IPv4 address space will continue well into the foreseeable future, therefore organizations will largely leverage other mechanisms to acquire IPv4 resources (e.g., transfers). As such, ARIN's mission to support the operation of the Internet means retaining some level of involvement in the IPv4 distribution process.

It is likely that amidst a robust IPv4 transfer market, ARIN's role will involve:

- a) Ensuring accuracy of records and maximal transparency in the transfer process;
- b) Representing the full range of community interests, beyond those of the most active commercial actors;
- c) Accelerating IPv6 adoption to provide the community with a sustainable alternative to IPv4.

I do not foresee the overall scale of ARIN's work changing, but expect that different priorities will arise as the community's usage of number resources evolves.

What are your thoughts on needs-based justification for the receipt of IP addresses?

Needs-based justification is a reasonable approach for stewardship of a limited resource from a common pool. It ensures a degree of 'fairness' in the distribution of the resource, compared to a market-driven model which favors actors with greater financial capacity.

However, there are challenges with the current system, as some members of the community are not always able to meet the 'needs' requirement and therefore favor a commodity market, which weakens ARIN's ability to be a good steward.

Consideration can be given to reviewing the conditions that must be met when requesting allocations, bearing in mind that organization's ability to accurately forecast future usage will vary widely as the community and business models diversify. Priority should be placed on reducing the administrative burden on ARIN and the community while encouraging transparency so that accurate public records can be maintained.

What are your thoughts on the rights and responsibilities of legacy IP address holders?

Given that the IP addresses were allocated to legacy holders before the existence of RIRs, by default they are not subject to RIR contracts such as ARIN's RSA. As such, legacy holders should be free to use their number resources as they see fit (within legal bounds), without fear that they will be held to

conditions that did not apply when the resources were allocated.

That being said, it is generally accepted that because IPv4 resources are limited, the actions of legacy holders with respect to transfers and allocations have a significant impact on the operations of the wider community. Legacy holders therefore have both the opportunity and responsibility to make choices that benefit the community of which they are a part - a community which, through consensus, allows their number resources to have value. No choice should be coerced, and instead legacy holders should be given every opportunity to strengthen the global network as they are able.

ARIN does a measure of outreach and capacity building. Is this something that should be expanded, contracted, or maintained as is? In particular, much of this outreach and education has been centered around the transition from IPv4 to IPv6. Should that emphasis continue or are there other areas or topics that you feel should be prioritized?

As the community that is impacted by ARIN's work grows, its outreach should be expanded to treat with new concerns and needs. In particular, there are sectors of the community which have less mature network operations or where the value of number resources is not fully realized. These sectors can benefit from ARIN's education around fundamental issues such as:

- a) Accessing and use of number resources;
- b) Development of Internet infrastructure, drawing on lessons from ARIN's own stewardship;
- c) The roles of institutions like ARIN and other RIRs, and how they are intended to interact with organizations, especially service providers.

IPv6 adoption should remain an important component of the education, as it continues to be the best option for sustainable growth of the Internet. Here, more practical "how to" education and mentorship from experienced implementers will be more valuable than the historical debate over why, when and how.

ARIN can achieve this expanded outreach through increased collaboration with local and regional community groups whose missions are aligned.

Please describe your Board Governance (or similar) experience.

I have served as the Program Coordinator for the Caribbean Network Operators Group (CaribNOG) since its formation in 2007. In this role, I collaborate with other members of the CaribNOG leadership team in its mission to develop the regional network

operator community. My primary responsibilities are to:

- a) Identify community needs and emphases;
- b) Develop plans and programs with stakeholders;
- c) Develop key relationships within the community and with partner institutions;
- d) Secure sponsorship;
- e) Coordinate Regional Meetings.

~~ARIN~~ ELECTIONS ✓✓✓ 2017

VOTING OPENS

6:00 PM EDT
THURSDAY, 5 OCTOBER

VOTING CLOSES

6:00 PM EDT
FRIDAY, 13 OCTOBER

Watch for an email on
Thursday, 5 October
at 6:00 PM EDT with
instructions on how
to vote.

www.arin.net/participate/elections