

**ARIN Board of Trustees  
and ARIN Advisory Council Voting:**

Voting Opens: 3pm EDT, Thursday 9 Oct

Voting Closes: 3pm EDT, Sunday 19 Oct

*Cast Your Ballot at:*

<https://www.arin.net/public/election/>

# TABLE OF CONTENTS

## Board of Trustees

Timothy Denton .....4  
Bernadette Lewis .....6  
John Sweeting .....8  
Bill Woodcock..... 11

## Advisory Council

Dan Alexander .....15  
Kevin Blumberg .....17  
Mike Burns .....19  
Andrew Dul .....21  
Robert Duncan .....23

David Farmer .....24  
Nick Guy .....26  
David Huberman .....28  
Timothy Kaufman .....29  
L Sean Kennedy .....30  
Leif Sawyer .....32  
Chris Tacit.....34

## NRO Number Council

Steven Goodman.....37  
Ron da Silva .....38





# 2014 BOARD OF TRUSTEES

## Timothy Denton



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	www.tmdenton.com
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	I have none at this time.
<i>Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	There are none.

### *Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the Board of Trustees of ARIN..*

I have served as a Member of the Board of Trustees of ARIN since 2009. I was elected as Chairman of the Board of Trustees of ARIN in January 2011 and resigned when my term as CRTC Commissioner ended in August 2013. In the past I served on the Board of Directors of the Canadian Internet Registration Authority (CIRA) as a representative of registrars, and in various consulting positions in the ICANN structure both for Tucows (www.tucows.com) as part of the Domain Name Registrars' Organization, and for ICANN itself. My legal and representational work before the appointment to the CRTC focused on gaining access to underlying facilities on behalf of ISPs, domain name and telephone numbering policy work, such as ENUM, and spectrum issues. My term as Commissioner at the Canadian Radio-Television and Telecommunications Commission, Canada's federal telecom and broadcasting regulator ended in August 2013. The relevance of this position to the ARIN Board lies in a) working cooperatively as a judge and policy maker on a panel of similar people, and b) understanding and operating in a complex policy environment. I continue to sit on the Nomination Committee of CIRA and the Canadian board of ISOC.

### *Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

There are none at this time. As a Board member of ARIN, we are subject to a rigorous review of possibly conflicting associations. If they arise, they have to be discussed with counsel to ARIN and taken to the Board of ARIN for a decision. If the Board determines an association is in potential conflict, we get rid of the association.

### *What are ARIN's three greatest challenges?*

1. ARIN is frequently menaced with legal challenges to its legitimacy as the exclusive registrar of IP addresses in its region, both newly issued and legacy. Counsel and the Board must determine the appropriate responses and spend significant resources to ensure that various courts in the United States acknowledge ARIN's legitimate role as authoritative registry of IP addresses.
2. The contractual arrangements between the US Department of Commerce and the IANA function, and the relations between the RIR system and IANA, have the effect of placing the registry functions into a Virginia not-for-profit with no more status than a business association. A more solid legal and institutional recognition of the central role of the registry system to the health of the Internet would be greatly preferred.
3. The impending transition to some new system of Internet governance provides possibilities for strengthening, maintaining or weakening the fundamental virtue of ARIN, which is that policy is developed by the community. It is of the utmost

importance that ARIN's legitimacy and methods of self-government be recognized in any new arrangements that might ensue.

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

I think ARIN's function as authoritative registry of IP addresses in its region will not change. The transition to IPv6 means that larger blocks of addresses will be issued, and that - as it appears at the time of writing - more time will elapse between requests for addresses. This raises the possibility that keeping track of IP addresses will be more difficult, if ARIN is unable to update registry information on who holds what with enough regularity. The current thinking is that ARIN may need fewer people to accomplish its functions in the world of IPv6. I take no position on this idea. Let the facts present themselves first, and then we can address them.

As to IPv4, it is already evident that inter-regional transfers are becoming more important. This raises the question whether the future registry system will see greater cooperation, greater coordination, portability of IPv4 address blocks, or even a common global registry. Whatever degree of cooperation or common policy remains to be worked out by ARIN's consensus policy formation process.

### *What is your opinion of the principles outlined in RFC7020?*

RFC7020 is the definitive current description of the IP registry system. Its principles are expressed mainly in the "goals" section (2). I agree with them. Authored by Russ Housley, Geoff Huston, David Conrad, John Curran, RFC7020 expresses how the system must work. They describe three goals: allocation pool management, hierarchical allocation, and registration accuracy, and then state, in relation to them, "These goals may sometimes conflict with each other or with the interests of individual end users, Internet service providers, or other number resource consumers. Careful analysis, judgment, and cooperation among registry system providers and consumers at all levels via community-developed policies are necessary to find appropriate compromises to facilitate Internet operations." An ARIN Board of Trustees member should bear these principles in mind when exercising his duties as Trustee.

### *Do you feel that resource holders are actively engaged enough in the Public Policy Development process and what, if any, changes would you like to see?*

Several years of observation of ARIN processes have persuaded me that the organization strives for fairness, participation, and orderly discussion. A small proportion of resource holders actively participate in ARIN activities. Every resource holder must decide whether to participate according to their own judgment of whether the time and

effort allocated is useful relative to costs. It is not my place to substitute my judgment for the judgments of those who participate and those who choose not to. ARIN goes to considerable effort to generate knowledge of, and participation in, its forums, such as by ARIN on the Road and by scholarships, and other forms of outreach. It is always possible to improve them, and I would be open to suggestions in that regard.

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***What is the appropriate scope for ARIN's organizational activities and responsibilities?***

I cite RFC7020:

"The RIRs were established in a bottom-up fashion via a global policy process that has been documented as the ICANN

"Internet Consensus Policy 2" [ICP-2], which details the principles and criteria for establishment of Regional Internet

Registries. The RIRs also conduct regional number policy development used in the administration of the number resources for which they are responsible." Other activities undertaken by ARIN should be reasonably ancillary to these core functions. They include activities which serve to authenticate IP addresses, and address holders, such as reverse DNS, public WHOIS, and RPKI. In addition, ARIN has real interests in the future evolution of the ICANN/IANA system, and therefore should participate in discussions concerning that evolution.

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***What are your views on the multi-stakeholder Internet governance model?***

The multi-stakeholder model is the essential source of the legitimacy of the Internet's governance. It is distinguished from the earlier model of treaty organizations, wherein states are the only legitimate actors, and all parties of whatever nature are required to speak through states. The multi-stakeholder model broke with the earlier system, by legitimizing the participation of private businesses, communities, and interest groups. For me, it represents what I hope is a permanent and irreversible improvement in international organization of communications.

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***Do you believe that needs based number allocation is a fundamental principle of the RIR system?***

Yes. Here is why. There are two ways to allocate a scarce good: markets and authority. Markets work very well, but they can be used to concentrate power in the hands of the rich at the expense of the poor, or less well-off. In the circumstances of IP address allocation, an unrestricted market would result in constraining the sources of numbers to those with great wealth. The effect would be to empower a small number of actors to generate huge profits, to the detriment of the growth of the Internet and the equitability of current arrangements, including the "innovation without permission" which is key to the nature of the current Internet. Unregulated private monopolies are an ugly thing, as Margaret Thatcher once said. The current needs-based system provides a degree of accountability to the community as a whole, and to public institutions, which would not be available if the sources of IP addresses were privatized. If markets replaced the current system, it would likely lead eventually to the reinvention of a costly regulatory system. The current RIR system achieves the same goals of equitable access to numbers, constraint of monopoly powers, and permission-less innovation. While markets have a legitimate role in the pricing of IP addresses once they have been issued, I do not think unrestricted market allocation of IP addresses at the source would benefit the public. To make this real, think of the effect of the Homestead Acts in the United States, passed from the 1860s onward, which distributed limited parcels of land in the mid-West to those who would work it, on the distribution of

wealth. Compare their effect with the original land grants in the 1700's Virginia, which reserved two thirds of the state's territory to the sons of aristocrats. Which society provided more opportunity: Virginia or the mid-West? The Homestead Acts were a classic example of a needs-based distribution policy, and a huge success in terms of generating a more egalitarian society.

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***Do you have any views on the proposal for the NTIA to transition out of its current ICANN/IANA role, particularly as it may affect the addressing community?***

The RIR system works reasonably well, partly because it is in considerable measure independent of the arrangements for domain name policy, which are much more directly governed by ICANN. In the ensuing months, there will be opportunities for the RIR addressing system to achieve greater clarity regarding ICANN or any successor organization to ICANN. Another consideration in the forthcoming changes is whether the RIR system will continue with non-overlapping regions, as ICANN's ICP2 policy stipulates. Whatever the outcomes - and it is unwise to try to predict too much - the bottom-up community-driven policy process of ARIN must be preserved. The worst outcome would be an ICANN accountable to no one, such as FIFA (soccer) or the International Olympic Committee.

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***ARIN does a measure of outreach and capacity building. Is this something that should be expanded?***

I am in favour of it, as long as outreach and capacity building relate to the appropriate scope of ARIN's activities, which I wrote about above, and provided ARIN has the resources to accomplish its core functions.

## Bernadette Lewis



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	www.ctu.int
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	I am the Secretary General of the Caribbean Telecommunications Union -a multi-stakeholder Caribbean ICT organisation with governmental, private sector and civil society members.
<i>Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	I foresee no limitations on my ability to attend Board and Public Policy Meetings in person or to serve the entirety of a 3-year term. It should be noted that I am employed and that some scheduling of the meetings must be coordinated. In the event that a conflict may arise, I will be prepared to participate remotely using appropriate electronic means.

### *Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the Board of Trustees of ARIN..*

In August 2003 I was appointed as the Secretary General of the Caribbean Telecommunications Union (CTU). My early work was dedicated to revitalizing the organisation and I transformed it into a relevant, vibrant and effective multi-stakeholder ICT organization. As a result of my efforts the CTU is now at the forefront of regional activities to harmonise policies and practices for the development of the Caribbean ICT sector.

In 2005, under my direction, the Caribbean achieved a worldwide first by initiating a regional, multi-stakeholder Internet Governance Forum (IGF). The Caribbean IGF has since met annually, achieving the milestone of its 10th Anniversary in August 2014. One of its major achievements has been to promulgate a Caribbean Internet Governance Policy Framework, the 3rd issue of which was finalised at the 10th CIGF. The CTU, by working with its members, has successfully implemented many of the policies in the Framework, one of the more significant being the proliferation of Internet Exchange Points in the Caribbean.

As a strong proponent for ICT-enabled Caribbean development, I initiated in 2009 and continue to advocate the use of ICTs through the Caribbean ICT Roadshow initiative. The Roadshow Initiative is designed to raise awareness and educate on the transformational potential of ICTs and the Internet in particular. Twenty-two Roadshows have been held successfully in eighteen Caribbean countries. The CTU has hosted many Internet capacity building activities, the most recent being, the South School on Internet Governance which was held for the first time in the Caribbean in April 2014, bringing together 134 delegates from 22 countries in Latin America and the Caribbean. The CTU has been actively promoting internet issues such as Cyber Security, DNSSEC and IPv6 hosting numerous capacity building activities on many topics.

The CTU is also involved in harmonising approaches for spectrum management in the Caribbean, ICT research; representing the region at international fora and serves as an industry watch, informing its members about the technological developments. The CTU also coordinates ICT development projects for the World Bank and Inter-American Development Bank.

In 2012, the Latin American and Caribbean Internet Registry's (LACNIC) conferred on me an Outstanding Achievement Award for my efforts towards developing the Internet in the region.

Today, the CTU is recognised by numerous international organisations as a relevant, vibrant and beneficial Caribbean ICT organization

### *Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

The only association which may give rise to conflicts of interest is a Cooperation Agreement to which ARIN and the CTU are signatories and which seeks to advance the development of the Internet in the Caribbean. ARIN is a financial supporter and a contributor to the work of the CTU.

Should I be elected, any potential conflicts of interest would be overcome by my recusing myself from discussions or decisions regarding the on-going relationship and activities between ARIN and the CTU.

### *What are ARIN's three greatest challenges?*

In my view, ARIN's greatest challenge is remaining relevant in an environment of rapid technological change.

Recognizing the above, the next challenge would be to find appropriate mechanisms to understand needs of its members and then to come up with appropriate responses in the best interest of all of its stakeholders

Thirdly, ARIN must increase its visibility and enhance understanding of its role in order to reach and engage a wider community of Internet stakeholders

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

Number resource responsible management will be the core of ARIN's function even in the face of IPv4 exhaustion but there must be emphasis on awareness-building and education on the imperative of adopting IPv6. ARIN can not do this alone, but could extend its reach and impact by engaging regional and national organisations in collaborative exercises to promote and support IPv6 adoption.

In a growing IPv6 environment, there will be a need to reconsider the administration of some of the principles by which its mandate is executed. The Internet of things, may give rise to new types of organisation and different legitimate requirements which may challenge the existing methodologies for number resource management.

### *What is your opinion of the principles outlined in RFC7020?*

RFC7020 provides a very good explanation of the Internet Registry system. I fully support intent of the principles outlined and responsibility placed on the community

to develop appropriate policies in order to achieve the goals of the Internet Numbers Registry System. However, I am concerned about the the extent to which they are realized in practice.

I am not satisfied, for example, that there is sufficiently “...broad, informed participation reflecting the functional, geographic, and cultural diversity of the Internet at all levels of policy development...” New methods of engagement must be employed in order to make these principles a reality in practice.

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***Do you feel that resource holders are actively engaged enough in the Public Policy Development process and what, if any, changes would you like to see?***

No. The number of resource holders actively engaged in the Public Policy Development Process is very limited and not reflective of the universe of resource holders.

I believe that aggressive outreach programs designed to engage the non-traditional stakeholders must be undertaken. While the outreach activities have been increasing, I am of the view that they are not sufficient. The Programs need to be formulated with cultural sensitivity; the message tailored to the audience and designed, not just to educate and raise awareness but to mobilize communities of stakeholders to action.

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***What is the appropriate scope for ARIN’s organizational activities and responsibilities?***

In my view, ARIN’s focus should continue to be on Internet Number resource management but I believe that greater emphasis should be placed on the development of “technical services to support the needs of the evolving Internet community”.

The needs of the Internet community are diverse and greater effort must be made to identify needs and tailoring the programs to meet the specific requirements of the various stakeholders. The needs of small developing states, are different from more developed states.

As has been demonstrated by the ARIN/CTU partnership, strategic partnerships with local organisations can go a long way in understanding needs and requirements and designing appropriate programs for different stakeholders.

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***What are your views on the multi-stakeholder Internet governance model?***

I believe that development of the Internet is a collective responsibility and therefore fully support the multi-stakeholder Internet governance model.

I recognized the value and understood the power of “multi-stakeholderism” long before it was applied to Internet governance. In 2004, I initiated the move to expand the membership of the CTU to include the private sector and civil society. In 2005, I organised the first multi-stakeholder regional Internet Governance Forum.

In addition over the course of my tenure as Secretary General, the CTU has worked in strategic partnerships with many Internet-related organisations. Of particular importance is the CTU’s partnership with ARIN, with which it has a cooperation agreement. The two organisations have come together effectively to further the growth and use of the Internet in the Caribbean.

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***Do you believe that needs based number allocation is a fundamental principle of the RIR system?***

Yes, the needs-based number allocation as specified in the Principle of Conservation is essential for the effective and responsible management of the Internet number resources especially in the IPv4 environment.

However in the emerging IPv6 world; the evolving Internet of things and the rapidly changing technological environment, it may well be necessary to review how this principle is administered.

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***Do you have any views on the proposal for the NTIA to transition out of its current ICANN/IANA role, particularly as it may affect the addressing community?***

I certainly welcome the proposal on for the NTIA to transition out of its current ICANN/IANA role. I fully support the four principles outlined for the transition, which is of concern to the addressing community. The RIRs obtain their numbering resources through the IANA functions and assigns them to their members. Therefore whatever model emerges, the community would want the IANA functions to continue seamlessly, with accountability and stability. Any failings in these areas could compromise the continued growth and development of the Internet.

I am at this point concerned that the “multi-stakeholder model that emerges will be a microcosm of the Usual stakeholders and not reflective

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***ARIN does a measure of outreach and capacity building. Is this something that should be expanded?***

It is highly commendable that ARIN has increased its outreach and capacity building and these activities should be expanded. However, in my view, there is a need to understand whether they are having the desired impact. This aspect certainly needs to be measured.

In addition, I have come to the conclusion that outreach and capacity-building are not sufficient. These activities must be undertaken and expanded with a view to mobilising local Internet communities of interest to execute programs that are designed to support growth of a secure, open accessible Internet in their countries and region.

## John Sweeting



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	I currently work for Time Warner Cable
<i>Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	None at this time

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the Board of Trustees of ARIN..*

EXECUTIVE MANAGEMENT: Network Engineering, Network Operations, Sales Engineering

Talented and accomplished Technology Executive with extensive background in telecommunications, internet operations, information systems management, and customer support. Award-winning record of improving operations, reliability, and profitability. Expertise in project management, quality control, process analysis, workflow streamlining, process engineering, and information security.

IT Management   Telecommunications   Information Systems   Customer Support  
 Network Engineering  
 Network Operations   Sales Engineering   Reorganization   Strategic Planning  
 Technology Deployment  
 Business Unit Integration   Vendor/Contract Management   Information Security  
 Budget/Cost Control  
 Process Engineering   Project Management   Resource Management   Inventory Control   Provisioning  
 Troubleshooting   Quality Control   Staff Development   LAN/WAN   Negotiations  
 Leadership

~ PROFESSIONAL EXPERIENCE ~

AMERICAN REGISTRY for INTERNET NUMBERS (2000-2005, 2009-present)

12 years member of the American Registry for Internet Numbers Advisory Council, serving as the Chair for the past 6 years.

TIME WARNER CABLE, Herndon, VA (August 2008 – Present)

Senior Director, Network Architecture & Engineering  
 Direct teams responsible for the initial architecture and engineering of all Time Warner Cable networks to include Backbone, Regional, Metro and last mile as well as all Data Center network infrastructure. Teams are responsible for all testing of software and hardware prior to deployment as well as preparation of all Engineering documentation. Administer over \$50 million in capital and operational budgets. Supervise 3 teams of engineers comprising of 3 – 8 engineers at any time. Negotiate pricing discounts with vendors and monitor contracts. Manage design, testing, and deployment of network platforms and operating systems, POP architecture, and new products/services. Coordinate customer trials. Manage 4th-level support across North America.

TATA COMMUNICATIONS LTD/VSNL INTERNATIONAL/TELEGLOBE AMERICA, Chantilly, VA / Montreal, Canada / Reston, VA 2001 - 2008

Senior Director, IP Engineering, Tata Communications Ltd ( Sep 2007-present)

Director, IP Engineering. VSNL International (Oct 2006-Sep 2007)

Direct Global Tier 1 IP Network planning, implementation, and support for \$100 million division of \$1 billion international data, voice, and managed network services provider. Administer \$25 million in capital and operational budgets. Supervise 17 employees worldwide. Negotiate pricing discounts with vendors and monitor contracts. Manage design, testing, and deployment of network platforms and operating systems, POP architecture, and new products/services. Coordinate customer trials. Manage 4th-level support across 90 countries.

- Improved performance by establishing QA/QC program, and change management process.
- Implemented capacity management process for all backbone and peering requirements.
- Created Center of Excellence in Reston location. Hired and trained staff.
- Enhanced profitability by deploying 10 new POPs and shutting down 7 underutilized POPs.
- Led deployment of 50 new routers and 20 new switches into IP network.
- Facilitated revenue growth from \$75 million to \$105 million, through network expansion and development of new products. Achieved improved network performance by selecting and implementing new technologies.
- Attained full Tier 1 standing by eliminating all transit requirements and establishing Peering with all other Tier 1 Service Providers.

Director, IP Strategic Planning & NGN Project (Feb 2006-Oct 2006)

Assigned to recently-acquired Teleglobe to carry out all strategic planning for IP and to lead Next Generation Network (NGN) project. Supervised team of 3 in conducting due diligence of 12 vendor's products. Compiled data necessary for RFP process. Led all testing.

- Led turn up and activation of >140 Gbps of peering circuits in 9 months.
- Director, IP Strategic Planning & NGN Project, VSNL International (Feb 2006-Oct 2006 continued)
- Co-Authored white paper on VLAN circuit usage to separate MPLS traffic from IPv4 traffic.
- Contributed to network security by conducting security audits and recommending configuration changes.
- Recommended implementation of intrusion detection and mitigation system.
- Saved \$10 million by moving to Force10 core platform.

Director, IP Services & Customer Relations, Teleglobe (Sep 2003-Feb 2006)

Selected for newly-created position in Marketing focusing on IP business line and

management of peering relationships. Oversaw all aspects of IP Transit business, including Engineering, Operations, Marketing, Sales, New Technology, and Planning. Identified required upgrades, initiated new circuit orders, and monitored delivery.

Evaluated new technologies. Supervised Sales Engineering, RFP processing, technology planning, and customer visits as relating to IP and peering areas.

- Developed and implemented business critical processes and procedures.
- Played major role in signing or resigning of major customers with combined revenue of \$30 million.
- Facilitated settlement-free peering from Tier 1 providers, which led to transit free service provider status.
- Developed new services and established new technology partnerships.
- Subject Matter Expert for IP business line during M&A activities.
- Chaired IP Steering Committee and Co-Chair of Peering Committee
- Facilitated business development by enhancing customer relationships.

Director, IP Network Services, Teleglobe (Mar 2001-Sep 2003)

Recruited by VP of IP Engineering, Teleglobe/Bell Canada, to build highly-skilled Provisioning team and process. Established top-performing provisioning team. Implemented IP provisioning system. Created and integrated workflow and order fulfillment processes. Approved customer network designs for global implementation.

- Successfully redesigned internet backbone to facilitate profit growth following Chapter 11 emergence.
- Maximized efficiency by re-engineering POP configurations and transmission backbone requirements.
- Effectively maintained Teleglobe's standing as a top Global Wholesale Network Service Provider
- Carried out major network redesign during financial and business restructuring period
- Coordinated sale of South American POPs and redistribution of equipment to enhance profitability.
- Updated 50 POPs in North America, Europe, and Asia, and closed 40 POPs in Europe and Asia
- Enhanced performance levels by introducing project planning, status reporting, accountability and more

~ PREVIOUS EXPERIENCE ~

Director, Service Delivery, CABLE & WIRELESS USA, Vienna, VA 1999 - 2001  
Manager, Internet Provisioning Systems, MCI INTERNET/CABLE & WIRELESS USA, Cary, NC 1996 - 1999

~ MILITARY BACKGROUND ~

UNITED STATES ARMY, US/Overseas 1987 - 1996  
Director Communications Security (1995-1996)  
Director of Security and Automation (1993-1995)  
Director of Telecommunications (1991-1993)  
Division Communications Security Manager (1987-1991)

~ EDUCATION ~

B.S. in Information System Management, University of Maryland (Cum Laude)  
A.S. in Business Administration, DeKalb College

Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?

My current company is a heavy user of IP address space but I have not responsibilities for procuring or managing at this time. Should a conflict arise I would advise all concerned and take whatever appropriate action was deemed necessary at the time.

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### *What are ARIN's three greatest challenges?*

Depletion of IPv4 and adoption of IPv6  
Current changes pending for the Internet Governance landscape  
Continuing to improve customer service and customer understanding

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

Changes will not be immediate, IPv4 and IPv6 will both be deployed in operational networks for years to come and ARIN will need to provide registry services for both protocols. IPv6 will provide customers enough address space so they will not have to keep coming back to ARIN as in the past but there are other challenges that lay ahead such as RPKI and other network services associated with Internet numbers. I see many challenges with the transfer market, especially when it becomes the only means to procure IPv4 address space, that will require dedicated resources with a unique understanding and expertise in that field. Customer service will need to continue to improve and other services as required by the ARIN community will need to be put in place. ARIN will most likely become much more involved in Internet Governance as well.

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### *What is your opinion of the principles outlined in RFC7020?*

I am in agreement with the principles and goals as outlined in RFC7020

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### *Do you feel that resource holders are actively engaged enough in the Public Policy Development process and what, if any, changes would you like to see?*

I feel that most resource holders are as actively engaged as their current situation calls for. I support the ARIN outreach programs which includes representation at certain shows and conferences as well as the ARIN on the Road initiative as I have witnessed first hand the good it serves in making more people aware of ARIN and its programs. As for changes, I will defer to the findings of the latest satisfaction survey on what changes should be made.

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### *What is the appropriate scope for ARIN's organizational activities and responsibilities?*

I believe the appropriate scope for ARIN's organizational activities and responsibilities should be guided by the requirements of the community it serves. Since the framework for managing Internet Number resources within ARIN's region has been built, the appropriate scope of activities and responsibilities should be defined so as to fully support that framework. That is to support the open and transparent nature of developing policies to ensure the community is best served.

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### *What are your views on the multi-stakeholder Internet governance model?*

I fully support the initiative that calls for the full involvement of all stakeholders, consensus-based decision-making and operating in an open, transparent and accountable manner. A stakeholder can refer to an individual, group, or organization that has a direct or indirect interest or stake in a particular organization, these may be businesses, civil society, governments, research institutions, and non-government organizations. It will take some time to fully implement but I feel it is imperative to the continuing openness of today's Internet.

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*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

I do believe that needs based number allocations is a fundamental principle of the RIR system whereas numbers should only be allocated to those that need them. Judging need should be left to the policies developed by RIR communities.

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*Do you have any views on the proposal for the NTIA to transition out of its current ICANN/IANA role, particularly as it may affect the addressing community?*

I do, my view is that it is a good thing and will most likely strengthen the role that the RIR's play. Certainly the RIR's must play an active role in helping to define the processes that will be put in place.

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*ARIN does a measure of outreach and capacity building. Is this something that should be expanded?*

I have been directly involved in this over the years and I must say that it is a good thing. I do not think a blanket statement that it should be expanded or contracted is necessary but that ARIN should continue to evaluate the program and adjust as it has over the last several years.

## Bill Woodcock



<p><i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i></p>	<p><a href="http://en.wikipedia.org/w/index.php?title=Bill_Woodcock">http://en.wikipedia.org/w/index.php?title=Bill_Woodcock</a></p>
<p><i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i></p>	<p>Aside from my role on the ARIN board, my primary day-job is as the Executive Director of Packet Clearing House, the not-for-profit organization that provides support to Internet Exchange Points and the core of the Domain Name System, and performs a cybersecurity coordination role between ISP NOCs and CERTs. PCH provides more than one hundred training workshops each year to the ISP community, and develops tools to help make Internet routing more stable and secure.</p>
<p><i>Describe any limitations on your ability to attend Board and Public Policy Meetings in person or to serve the entirety of a three-year term.</i></p>	<p>None. In twelve years, I have missed one ARIN meeting, and that was an unforeseeable medical emergency.</p>

***Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the Board of Trustees of ARIN..***

At PCH, I'm responsible for a budget of \$260M/year, twenty-five staff, and have operations in more than seventy-five countries. I have been a co-founder and chaired the boards of directors of several other Internet-industry non-profits, including the Internet Capacity Development Consortium (seven years), the Apple Network Managers Association (three years), and was a co-founder and member of the board of directors of the ISP/Consortium (five years). I've also held CEO, President, or Vice President roles in five for-profit companies over the last thirty years. I've helped found four Network Operator Groups, and sat on the program committees of half a dozen of them. I've been on the technical advisory boards of more than a dozen large Internet companies. I attend the meetings of the other four RIRs, and ICANN, regularly, and have done so since each of them was founded. A more detailed CV is available on LinkedIn: <https://www.linkedin.com/profile/view?id=2680>

***Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?***

No.

***What are ARIN's three greatest challenges?***

The greatest challenge is also the most amorphous: change in the Internet governance model that disenfranchises ARIN's constituency, network operators who need a predictable and transparent supply of IP addresses as a key input to their business model. As the Internet has become popular and central to many economies, it's also become a threat to some governments, and this has made it a target. Thus far, we've enjoyed an unparalleled ability to grow our businesses free from heavy-handed governmental intervention or prohibition; that's not true for many of our colleagues in other regions. In the international governance fight between governments that value the economic productivity of the Internet versus the governments that are threatened by the Internet's ability to broadcast anonymous free speech, our side is in the minority by count and by population. We fight an uphill battle to preserve the freedoms that we've taken for granted. The intergovernmental fight is not multi-stakeholder, not open, not transparent; it occurs behind closed doors, in three-week-long meetings, with arcane rules and practices that ensure that the private sector's interests will never be aired or given credence. This is an existential and very difficult challenge.

The second challenge is one of self-definition, and is one of shaping who we are as a community, as we move forward. IP addresses have always been allocated

on the basis of need, to network operators who are building the Internet. Internet service providers, content delivery networks, and network operators of any sort for whom the Internet is their primary business, are in the dangerous position of having inflexible demand. Without an IP address, a customer's need cannot be served, and revenue is lost. If needs-based qualification of IPv4 transfer recipients is abandoned, nothing stands in the way of speculators who will quantify the inflexibility of our demand, and extract every last cent that our customers are able to come up with. Being plundered by banksters is detrimental to our business models as Internet services companies, and clearly not where we want to go, regardless of how much they'd like to lead us there. On the other hand, as demand becomes more difficult to meet, problems of fraud increase and ARIN's resource analyst staff are stretched beyond their ability to provide good and timely service. So something has to give, or we need to think our way out of this box and into a more productive IPv6 transition. Our policies have become long and unwieldy and convoluted. It's time to take stock, define our goals from first principles, and proactively steer in that direction, rather than letting pre-runout momentum carry us further and further in a direction that's antithetical to our long-term success.

The third challenge is related to the second, and is also one of self-definition and direction. As more of what ARIN does for its constituents moves to IPv6 and 32-bit ASNs, scarcity becomes less of an issue than fragmentation and routing-table bloat. We've just seen global routing tables surpass 512K routes. What does a future ARIN look like, if the primary purpose of IPv6 policy shifts from conservation of addresses to conservation of allocations, while the remainder of IPv4 is simultaneously going the opposite direction, toward smaller and smaller unaggregatable announcements that form one side of 6-to-4 NATs and the service-addresses of dual-stacked servers? The number of transactions each ARIN constituent does with ARIN will doubtless decrease, as will the complexity and documentation requirements of each transaction. This would seem to point in the direction of more automation, and less human involvement and decision-making in the resource-allocation process. That's hard to reconcile with the short-term demands placed on the analysts by the ever-more-complex and ever-more-stressful resource requests immediately preceding and following runout.

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

There are essentially two questions here: "How does ARIN change during the time when available IPv4 is scarce, and demand is still high?" and "How does ARIN change during the time when IPv6 predominates, and IPv4 is no longer of primary interest?"

The latter question is a much easier one: Although ARIN's function and role remain identical, the number of transactions, particularly repeat transactions, will be far

fewer, and the degree of scrutiny necessary for approvals may be less. So ARIN in a predominantly-IPv6 world can be a smaller, more streamlined organization, with more automated transactions and self-provisioning. In the long term, we can expect to trade up-front investment in automation for lower recurring costs in customer service and organizational overhead.

The former question, though, regarding the IPv4 scarcity period, is much trickier. Particularly, maintaining due diligence in the face of increasing fraud, maintaining the accuracy of the whois registration information, and dealing with network operators who are under greater and greater pressure to procure addresses... All this will unavoidably be a difficult period, and one that will require tactful and hard-working human beings to provide the resource-allocation service. I don't think that automation will provide us with any magic solutions to what are essentially human problems during this period and, unless there are dramatic shifts in the way the community views needs and due diligence, I don't think that we can expect to see any significant cost reductions until after we're through the time of scarcity.

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### *What is your opinion of the principles outlined in RFC7020?*

The document is the product of a committee, so it reflects a consensus view of uncontested facts, so the principles outlined are uncontroversial.

Of greater interest than what's outlined in 7020 are the things that were too controversial to gain consensus and are thus *\_not\_* discussed in the document. For example, 7020 elides mention of National Internet Registries. NIRs aren't a direct concern for ARIN, since we don't have any in our region, but in the big picture, NIRs are a major concern: they're a form of existence-proof of the ITU position that IP addresses should be allocated by the ITU to national governments, which could then sub-allocate them to the Internet networks of their choosing. NIRs have captured the governance of APNIC, to the detriment of network operators both in non-NIR countries, which are disenfranchised because they're outside of the voting bloc and can't influence policy significantly, and network operators within NIR countries, who no longer have access to a multistakeholder governance model and transparent IP allocation process. Looking again at the big picture, if the ITU wins its long fight to take control of Internet governance and Internet resource allocation, this same set of problems would be visited upon the ARIN region, since no government will bow out of the ITU treaties, because of the radio spectrum and geosynchronous satellite slot allocations they receive through the ITU. So, it's not politically feasible for a document like 7020 to call out the NIRs as a policy problem, and it's not clear that there's an alternate forum that's as authoritative, well respected or positioned as an RFC.

So the issues with 7020 aren't what's included, but what's not included.

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### *Do you feel that resource holders are actively engaged enough in the Public Policy Development process and what, if any, changes would you like to see?*

Well, obviously, some are, and some aren't. There's a very active public policy process, and a relatively small fraction of the total community does the lion's share of the work, and could thus be said to receive some disproportionate benefit from the passage of policies that reflect or favor their views. I think that may just be the way of the world, and it doesn't strike me as particularly problematic, in the absence of any barriers to entry confronting other resource holders who wish to participate.

As for changes, one of my highest concerns with the policy development process is that it has been one almost entirely of agglomeration. I think it's high time that we put more effort into stripping out outdated policies, streamlining, harmonizing, simplifying, removing redundancy... For example, I wholeheartedly supported David Huberman's recent successful efforts to remove some of my own early-2000s policies that were always intended to be temporary amnesty-and-cleanup measures, but had fossilized in the depths of the NRPM. I'd love to see more policy-work of this type,

aimed at making a *\_better\_* NRPM, rather than just *\_adding\_* to it. If the membership would like to see more active participation in the PDP by board members, I'd be happy to put my own shoulder to that wheel.

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### *What is the appropriate scope for ARIN's organizational activities and responsibilities?*

ARIN's purpose is to maximize the availability of IP and ASN resources to network operators in the ARIN region. That necessitates a bit of collateral long-term planning, Internet governance policy engagement, et cetera, but it's critically important that we not let the tail wag the dog... Any time we engage in anything outside of the core mission of Internet resource allocation, we must have a clear and unassailable rationale for why the work is necessary to support the core mission.

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### *What are your views on the multi-stakeholder Internet governance model?*

Multi-stakeholderism is just a neologism for working cooperatively like adults. Everyone believes that their own interests should predominate, and that they and their own compatriots can provide sufficient governance for the Internet. That's just as true for government and for civil society as it is for us in industry. Since each sector has the ability to halt progress we all have to work together and compromise if we are to move forward. This requires putting some egos aside, and trying to put ourselves in others' shoes; not always easy, particularly when it doesn't look like the other sectors are operating in good faith, but if we fail, our industry's growth comes to a halt. So. Multistakeholderism it is, now that government and civil society want places at the table.

For industry, multistakeholderism means that the Internet isn't entirely just our own free-market playground anymore, and that we need to be sure that we're not being dismissive of governments, or so frustrating their goals that they'll be forced to employ regulatory, legislative, or treaty means of compelling our actions. For government, it means that they have to look up from their domestic fiefdoms and realize that they're small fish in a global pond, and that they can't just dictate what's going to happen because, heck, most of the world isn't subject to their laws. For civil society, it means understanding that their rights and freedoms come with a real-world pricetag for us in industry, and that they need to follow global norms of reasonable behavior, not just whatever seems reasonable to them in the moment.

In a lot of ways, I think the most important thing for us as an industry is to maintain the high moral ground. Since governments have the ultimate authority in each of our markets, we cannot give them the excuse to exercise it to our detriment. That means that when we talk multistakeholderism, we need to walk the walk, and not secretly make the meaningful decisions behind closed doors. We need to make sure that our policies and decisions really are bottom-up, so we have a leg to stand on when we talk about their legitimacy. We need to hold ICANN to some regime of accountability, so it doesn't run off with its new-gTLD-registration jackpot and have an ITU-style hookers-and-blow-fest. I need to tone down my rhetoric and wrap up this answer. Are any of you reading? Just checking. :-)

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### *Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

Mine is not a religious tenet, but a pragmatic one. The alternative to needs-based is giving scarce resources to people who don't need them, at the expense of people who do. I'm not making an argument in favor of philanthropy, or socialism, because that's not what you call it when you're the recipient. You call it responsible behavior. So, in my view, it's responsible to ensure that the recipient of an IP address is someone who can actually use it to build the Internet, and doesn't just *\_want\_* it in order to extract excess rent from someone else who *\_needs\_* it. Irresponsible behavior is to allow third-parties to stand in the middle of transactions that *\_our\_* customers depend

on\_\_, and drive our costs up, increasing costs to our customers, the public. That would be allowing ourselves to be used as a tool to extract money from our customers (and ourselves) on someone else's behalf. There's simply no reason to allow ourselves to be used that way, nor our customers to be victimized that way. This isn't a moral stand, it's one of self-preservation. We have laws against pick-pocketing not because we're uptight prudes, but because theft gets in the way of orderly business, satisfied customers, and predictable outcomes. So, yes, needs-based allocation benefits our community, while getting rid of it benefits banksters at our expense.

Is that a fundamental principle of the RIR system? Not inherently. Is it a fundamental principle of economics and human nature? Yes.

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*Do you have any views on the proposal for the NTIA to transition out of its current ICANN/IANA role, particularly as it may affect the addressing community?*

So we're in a waiting-for-the-other-shoe-to-drop limbo at the moment. NTIA have said that if a multistakeholder oversight body came into existence, it would hand its ICANN-oversight role off to that body. It left the criteria somewhat vague, and at-its-sole-discretion. The ITU, of course, wishes to provide ICANN oversight, just long enough to burn it to the ground, along with any vestiges of industry self-governance or multistakeholderism, but that's what the NTIA \_isn't\_ going to hand oversight off to. ICANN itself would just love to have no oversight at all, but I don't think any of us think that's a great idea. ICANN is trying very hard to create a pet oversight process, that would be toothless. That way lies self-perpetuating bureaucracy, which is a direction ICANN is already headed in at a pretty fast clip.

So there are at least two significant problems here... First, ICANN needs oversight, and the US government is no longer a credible provider of such, but nothing better is on the horizon. Second, creating something better from scratch is fumbling in the dark if there's no assurance that the USG will also agree that it's better and hand over the oversight role. I don't know that there's any good answer out there yet, just a couple of difficult and interdependent problems.

I do think that this class of problem is generally solved through coalition-building... Find enough other people who agree that they have common cause, and soon you have your solution. I believe that the RIRs derive their authority by sitting between a unique delegation hierarchy defined by the IETF, and the IP-address-needing-industry. That means that we need to continue to be sure we're accurately representing our constituency, while reinforcing our relationship with the IETF. There's been a lot of conversation about contractual relationships or exchanges of letters of commitment or MoUs. Doing so with ICANN benefits only ICANN, in their desire to continue being the IANA administrator. Doing so with the IETF, on the other hand, would solidify the RIRs position, and be the beginning of a coalition that might be able to define ICANN oversight in the future.

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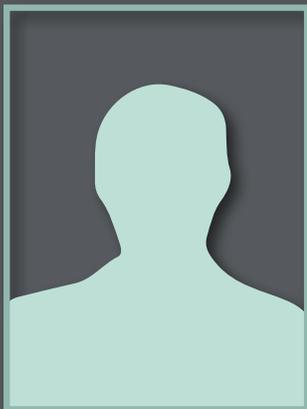
*ARIN does a measure of outreach and capacity building. Is this something that should be expanded?*

As ARIN gradually moves toward meeting in lock-step with NANOG, and NANOG grows too large to be accommodated or sponsored in smaller cities, there's a danger that full ARIN member meetings will happen in fewer and less diverse locations, instead going back to a few large cities in the U.S. over and over. I've worked within the ARIN board toward the goal of guaranteeing that a representative portion of ARIN meetings occur in Canada and the Caribbean portions of ARIN's region, and the ARIN-on-the-road meetings have been doing an excellent job of bringing policy discussion, education, and outreach to smaller cities in the ARIN region, that aren't in a position to host a full meeting. So, I think that ARIN has found a really good balance of outreach activities that maximize the value to the membership, without incurring extravagant costs. After many years of work, I think the ARIN outreach work is finally dialed in and producing optimal results.



2014 ADVISORY COUNCIL

## Dan Alexander



*Optionally provide one URL to any one blog, social media, or external website of your choice.*

*Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?*

I am currently employed by Comcast Cable.

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

No limitations

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

- \* Have authored several policy proposals that have been adopted by the Board of Trustees
- \* Have shepherded many proposals through the process
- \* Served on the PDP committee helping to define the latest revisions to the Policy Development Process
- \* Served on the Finance Review committee providing feedback to the Board of Trustees on the fees paid by Member Organizations
- \* Served three terms on the ARIN AC
- \* Been involved in Internet Governance serving on an IPv6 Working Group at the ITU

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

I try to abstain from voting, or recuse myself from discussions when the AC deliberations could present a conflict of interest with my relationship to my current employer, even though I distinctly separate the two roles and functions.

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

Yes I can commit. No there is no conflict or concern.

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

I have considerable experience to bring to the position along with a sense of responsibility to those who have offered me the privilege to serve.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

- To serve the Internet Community
- To act as the voice of the Internet Community in advising the Board of Trustees on Internet number resource policy and related matters
- To provide a voice to all ideas large and small

*How do you separate your personal opinions from those of your organization and those of the community?*

Through many years of experience. There have been a number of occasions I have voted against my personal opinion because of the consensus of the Community. My role on the Advisory Council is to facilitate the views of the Internet Community, not to advance my personal opinions.

*What is your opinion of the principles outlined in RFC7020?*

RFC7020 was a necessary update to RFC2050 given the quickly changing landscape as a result of the depletion of IPv4 address resources.

*How can we further accelerate IPv6 awareness and deployment?*

Many have done a very good job promoting a protocol that is difficult to justify against business goals and budgets. I have often said that IPv6 would not reach widespread deployment until a point after the IPv4 address pool has been depleted. My previous opinion stands that IPv6 will reach its tipping point of the average user being able to reach the majority of the services they consume using IPv6 only by the end of 2015.

*What areas of policy, if any, need more attention and why?*

The Network Resource Policy Manual requires a great deal of simplification. After years of small adjustments we need to visit a fundamental rewrite that reflects the requirements of the times and the management of existing resources.

*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

Yes, I believe needs based number allocation is a fundamental principle of the RIR system, but I also believe the definition of "need" is something that requires continued debate. IP address resources should be allocated for the sole purpose of using them on active networks. The level of complexity to which requirements are placed on network operators, however is something that should be reviewed. This ties to my previous response about policy requiring a great deal of simplification. I feel the current level of needs requirements is too complicated.

*How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

The number of devices that will join the Internet using IPv6 in the next decade will

dwarf the scale of the entire IPv4 Internet as we currently know it.

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*What do you like about the ARIN AC? If you could improve on anything, what would it be?*

There are many well reasoned, and intelligent opinions about the challenges before us. The Advisory Council does a very good job of trying to balance those opinions, and reach a level of consensus to move work forward, even though there are often individuals who will disagree with the outcome. My hope would be to help the AC consolidate these opinions into a more simplified set of logic that could define policy in the years to come.

## Kevin Blumberg



*Optionally provide one URL to any one blog, social media, or external website of your choice.*

*Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?*

My primary work is at The Wire Inc as the CTO, an ISP based in Toronto, Canada. I also sit on the board of the Canadian Network Operators Consortium Inc. and act as the Treasurer.

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

I have no specific limitations that would prevent me from attending AC and Public Policy meetings.

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

The Wire Inc. CTO - 2001 - Current  
 Canadian Network Operators Consortium Inc.,  
 Board Member, Treasurer - 2010 - Current  
 ARIN Advisory Council - 2012 - Present  
 Toronto Internet Exchange - Board Member, 2011 - 2013

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

I do not foresee my current organizational commitments to be in conflict with serving on the Advisory Council. In the past I have stated my affiliations to the Advisory Council and recused or abstained in the limited situations where it was appropriate.

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

I have no conflicts that would prevent me from attending the in person meeting in Reston. During my previous term on the Advisory Council I attended all of the meetings.

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

I have been involved in internet related endeavors since 1994. During that time I have been involved in many aspects of the industry both in a technical and business role. I have always been open to dialogue and I'm not afraid of being wrong. I have done a lot of work in recent years on issues specific to internet related issues in Canada.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

The three fundamental principles are from the Policy Development Process that the guides the Advisory Council.

- 1) Enabling Fair and Impartial Number Resource Administration. The policy should be fair, concise, unambiguous and be consistent to apply.
- 2) Technically Sound. The policy must weigh the benefits of conservation, efficient utilization, aggregation and uniqueness.

- 3) Supported by the Community. A policy that is not supported by the community should be worked on until consensus can be reached. If after development consensus can not be reached the policy should not be advanced.

*How do you separate your personal opinions from those of your organization and those of the community?*

I am keenly aware of when my own experience is driving an opinion versus information taken from peers and the community. I constantly will work with others so that my opinion does not interfere with the views of the community.

*What is your opinion of the principles outlined in RFC 7020?*

The RFC was a replacement for RFC 2050. It shows the currency state of the RIR system for the distribution of unique IP and ASN resources. In my opinion the RFC is a point in time reference. It should be used as a important criteria when working on policy, especially when that policy might conflict with the RFC.

*How can we further accelerate IPv6 awareness and deployment?*

I believe that they status quo with public awareness is appropriate but additional followup with the ARIN community, that does not have an IPv6 allocation or assignment, should be done. I don't feel that current policy regarding IPv6 acts as a detriment to deployment but if that should arise it must be rectified swiftly.

*What areas of policy, if any, need more attention and why?*

The greatest attention will need to be to policy that doesn't work in a post run out environment. It is critical for all of the community to vet the issues related and clean up or clean out policy that is no longer practicable. I see a key area over the short term being around issues related to Section 8 - Transfers. This section will become far more utilized by the community and will have the largest impact.

*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

I believe that allocation of numbers in a fair manner, to the community as a whole, are achieved through needs basis. I also believe that the criteria, as set out in policy, has changed over the years. The criteria should continue to be adjusted to not only simplify the process but also deal with the additional realities of the transfer market post exhaustion.

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*How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

The stake holders in the growth of the internet will continue to adapt and innovate. The adoption of IPv6 and translation technologies will limit the impact over time of IPv4 exhaustion. The continued growth of IPv6 will see new technologies and applications that would not exist otherwise.

What do you like about the ARIN AC? If you could improve on anything, what would it be?

Over the past 3 years I have come to appreciate the wealth of diverse knowledge within the Advisory Council and how the group as a whole is able to take that and use it towards improving policy.

I would like to see more engagement with the community. I don't believe that relying solely on e-mail as the primary discourse outside of the PPM and PPC are enough. I would like to see discussion through whichever means will bring more of the community to the table.

## Mike Burns



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	<a href="https://www.linkedin.com/profile/view?id=5698636">https://www.linkedin.com/profile/view?id=5698636</a>
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	IPTrading
<i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	No limits.

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

- 1978 ARPANET account through Brookhaven Labs
- 1985 MIT BS degree
- 1986 Founded Nationwide Computer Systems, Inc to sell computers and LANs.
- 1996 Became ISP selling hosting, access, email services
- 1998 Added satellite and Voip services
- 2000-2004 Acquired several ISPs
- 2004 Added WISP services to 70 properties
- 2010 Bid against Microsoft in the seminal Nortel bankruptcy sale of IPv4 blocks
- 2011 Founded IPTrading to broker IPv4 address sales

In my past I have both received ARIN allocations and returned ARIN allocations to ARIN when I didn't need them. I have always been a small businessman, with all the hands-on activity that implies. I do the router configs, for example.

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

I am an operational IPv4 address broker whose business can be affected by ARIN policies, in particular ARIN transfer policies. But even policies which will have the effect of draining the free pool faster or slower can have an impact on my business activities. I do not have any conflicts of the sort enumerated in the link above, related to positions at other RIRs or Internet Resource organizations. In terms of handling conflicts of interest between my brokerage activities and AC activities, I offer to recuse myself from any vote which directly impacts any specific pending brokerage activity.

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

I can attend in person, it would give me a chance to visit with my brother in nearby Manassas.

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

No limits.

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

I have a different view on the role of stewardship of already-allocated resources than many in the ARIN community. My view is that an open and global market for IPv4 resources is the best application of our stewardship. I can be counted as an IPv6 deployment pessimist, and I think this is also a contrarian view. Diversity of viewpoints is one of the benefits of a multi-stakeholder community, and inclusion of people like me at the AC level strengthens the argument that the multi-stakeholder model is capable of fairly managing the Internet without government involvement. I have extensive technical experience designing and operating networks. I have been running DNS, webhosting, and email servers continually since 1996. I have in-depth experience with wireless and satellite networks, including physically installing almost a thousand infrastructure nodes around the world, including disparate locations like Laos, Ecuador, and Haiti. I also program in several languages. My business dealings with APNIC and RIPE members has brought me into contact with those RIRs and have given me a good perspective on how they are similar to and different from ARIN. As trading commences in LACNIC I expect to get more involved with that community as well. I would be the only broker on the AC, and I think that I would bring information to the AC which other AC members would not have access to. In the current environment, who would know better than a broker about pricing trends, inventory conditions, and issue and concerns of those participating in the transfer market, which will soon be the only source of IPv4? Finally I have experience as a policy proposal author, having proposed policies which have been passed and implemented as well as proposals currently under consideration.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

1. Keep registry accuracy topmost in mind when considering policy proposals.
2. Keep an open mind and be receptive to other perspectives.
3. Encourage community participation to strengthen the concept of multi-stakeholder governance.

*How do you separate your personal opinions from those of your organization and those of the community?*

My opinions have rarely aligned with conventional wisdom, yet I have been in business continually since 1986, interacting with customers, vendors, employees and investors. I can't remember any time where my personal opinions on any issues impacted my business relationships in any way. I think I was forced to develop "compartmentalization" as a result of my holding some outlandish views. In terms of ARIN

policy, my personal opinions about needs-testing took a backseat to the community's need for Inter-regional transfers when I removed language about needs-testing from my policy proposal 2012-1. Removal of that language allowed the proposal to be passed and implemented with the important 12 month exclusion language in place. Without that language, Inter-regional transfers would not have been implemented. So this is a case where my personal opinions had to take a back seat to other priorities.

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#### *What is your opinion of the principles outlined in RFC 7020?*

7020 fails to define "allocation pool" and so is very limited. If the meaning is restricted to free pools only, I have no problems with 7020, despite it standing the order of the principles on their head. The first principle, the one explicitly referred to in 2050 as the "primary" one, is registration. 7020 has it as number 3 of 3.

I see 7020 as an attempt to shoehorn needs-testing into RIR policies. APNIC and RIPE have already voted at times to remove needs-testing from transfers, so clearly the underlying stewardship principles which lead to needs-testing policies are arguable. I don't think they belong as principle number 1 in 7020, and I don't think they should apply to transferred resources which have been out of the free pool for at least a year.

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#### *How can we further accelerate IPv6 awareness and deployment?*

There has to be an economic incentive targeted at users driving IPv6 adoption. The lack of that incentive has doomed IPv6 deployment. I don't think there is anything ARIN can do. Now if Google or Facebook only answered IPv6 requests, adoption rates would explode. Without a killer app or a network flag day, IPv6 will struggle.

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#### *What areas of policy, if any, need more attention and why?*

Reduction of the barriers to trade in IPv4 address rights. The existing needs policies erect barriers which reduce registry accuracy. Ideal markets work to transfer scarce resources to their most productive use. Needs-testing of recipients has not been an error-free method of distribution, and a market-based method of distribution will not be perfect either. Since we cannot have perfection, I argue that our most important responsibility is the integrity of the Whois registry as an accurate portrayal of who owns the rights to these unique numbers. I understand that markets can be manipulated and that safeguards against that behavior are important policy considerations.

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#### *Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

Needs testing of free pool allocations is a fundamental principle of the RIR system because the RIR stewards were assigned the task of distributing from a limited address pool while at the same time growing the Internet. Other distribution mechanisms could have been used, but simply providing addresses for free to those who could demonstrate technical need is the appropriate application of stewardship, which I believe should involve the lightest touch of the steward. It seems obvious to me that

in an era (now ending) of free pools from which to allocate resources, requiring a needs test for transfers is also mandatory. Otherwise a person could have a need, get addresses, transfer to another party, and repeat, effectively draining the pool. To my mind, this is the reason why RFC2050 imposed a needs test both on allocations and transfers. However, in an era without free pools to draw upon, the lightest-touch test of stewardship requires an elimination of needs-testing and an emphasis on accurate registration of transfers. In the current era of transition from free-pool to exhaust, an optimum policy allows for needs-free transfers, but protects against rinse-repeat transfers designed to drain the free pool. My re-write of section 8.3 in 2012 added such protection in the form of a 12 month waiting period before allocations from the free pool can be transferred. But our general responsibility to ensure efficient use of address space will now be a function of the market, which has its own mechanisms to ensure efficient use of scarce resources, which mechanisms I believe will be at least as effective as the historical needs-testing regime has been in terms of conservation.

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#### *How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

I see the Internet trending towards increased CGN usage and deeper NAT levels. I think it is the path of least resistance, although it may not be the optimal path. I believe that CGN is effective and intuitive for IPv4 engineers, and the vast majority of customers are not aware whether they are behind CGN or not. Surprisingly to me, IPv4 prices have dropped, and supply in the market currently outstrips demand. I see a dual-stack IPv6/CGN Internet evolving over time.

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#### *What do you like about the ARIN AC? If you could improve on anything, what would it be?*

I like the concept of AC shepherds for policy development, it encourages new players to participate in policy development.

I like that AC members can mix it up on the PPML.

## Andrew Dul



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	<a href="http://www.ipaddressnews.com">http://www.ipaddressnews.com</a>
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	8 Continents Networks LLC
<i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	No limitations are known at this time that would prevent me from attending the public policy meetings or fulfilling the 3 year term.

***Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.***

Andrew Dul is currently an independent networking & systems infrastructure consultant at 8 Continents Networks LLC and is currently serving on the ARIN Advisory Council. He has been working in various Internet networking positions since 1996. In 1998, he joined the start-up network service provider, Internap where he became involved with ARIN. Following Internap, Andrew went to work 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. After Boeing, Andrew served a Seattle based nationwide law firm as their Systems and Network Architect before joining Cascadeo as a Network and Systems Consultant. Andrew has been involved with ARIN for over 10 years 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. He also formerly served on the ARIN Advisory Council from 2002-2005.

***Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?***

I do not have any associations currently that I believe would result in a conflict of interest. In the event of any future associations, I would promptly disclose the association to ARIN and recuse myself from any actions where there may be a conflict.

***The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?***

No conflict is anticipated.

***What differentiates you as a candidate, or makes you uniquely suitable to the post?***

In late 2013, I was nominated to fill an open seat for a one year term and I would like to continue the work I have started this year as a member of the AC for an additional term.

I have been involved with ARIN and the policy development process for a number of years primarily as an independent contributor, but I also served on the AC from 2002-2005. Over the past 15 years, I have worked for service providers, large enterprises,

small end-users, and as an independent consultant. I believe this varied background gives me different insights into the interests of many different types of ARIN's customers and other stakeholders. As an independent contributor, I have proposed a number of number policy changes and have encouraged conversations about the IPv6 transition through independent writings regarding the background economics of the transition.

<http://www.ipaddressnews.com/2011/10/17/16>

***Describe the top three fundamental principles that guide the ARIN Advisory Council?***

The AC should be guided by the following principles: Transparency, Inclusiveness, and Collaborative

The main job of the AC is to facilitate the number policy development process, as such it is important that the AC maintain transparency to ensure that the standards making process is open to all interested stakeholders and that every stakeholder has an opportunity to voice their opinion on current and future number policy. The AC must be inclusive because we are tasked with representing and incorporating the feedback of all Internet stakeholders to create fair and impartial number policy. Finally, the AC must be collaborative as different stakeholders may have very different interests on a specific matter and the AC's goal is to collaboratively create policy which best works for as many stakeholders within the Internet community as possible.

***How do you separate your personal opinions from those of your organization and those of the community?***

As an AC member, I am tasked with taking feedback from all members of the community and using that feedback to create number policy which best represents the interests of all stakeholders within the Internet community. My personal opinion is just one small part of that feedback. When I speak publicly on a topic, I intend to disclose which opinions are personal vs. statements which may be supported by other stakeholders or organizations.

***What is your opinion of the principles outlined in RFC 7020?***

I supported the draft of RFC 7020 to replace the now historical RFC 2050. RFC 2050 clearly no longer reflected the current structure or policies of the Internet registry system.

The goals now outlined in RFC 7020 reflect the highest needs of the registry system including maintaining uniqueness, registry accuracy, acknowledgement of hierarchical allocations for routing scalability, and overall address pool management. While the new text of RFC 7020 is not as exhaustive in enumerating goals and principles as RFC 2050, I believe that the new RFC does capture at the highest level the overall principles and goals of the Internet registry system.

Furthermore, I believe it was appropriate to take any principles which were not included in RFC 7020 and place them into an RIR's policy manual (ARIN-2013-4) to reflect a region's commitment to various principles which may not be global in scope.

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#### *How can we further accelerate IPv6 awareness and deployment?*

ARIN has done a good job of promoting IPv6 in various arenas. While one could always do more, this must be balanced with the costs to ARIN's members of outreach efforts. I believe IPv6's success as the long-term protocol of the Internet will be realized when the large content, mobile, and broadband providers have fully committed to IPv6's network without the use of carrier grade NAT or other transition technologies. Additionally, overall number policy simplification would be beneficial to all organizations as it would reduce the administrative overhead currently associated when working with the registry.

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#### *What areas of policy, if any, need more attention and why?*

Over the past year in the public meetings and within the AC meetings, I have highlighted the need for the ARIN community to look beyond the current IPv4 policies and draft policies before the community and think about what IPv4 number policy should look like in 5-10 years. I believe that we can create better policy that will support the Internet community by looking at the fundamental principles of a Internet Registry System and using those principles to develop near-term and longer-term IPv4 number policy. Policy simplification would also provide value to members of the Internet community.

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#### *Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

Needs basis has been a fundamental principle of allocations since the inception of the Internet. How needs basis has been implemented by ARIN and its predecessors, however, has changed over time and I would anticipate it changing further especially with regard to IPv4 transfers. Other regions (specifically RIPE) have recently greatly relaxed their needs basis testing for IPv4 transfers and I anticipate that the AC will be considering similar policy changes in the future. As an AC member, I will weigh all the input of the community in my decision on how needs basis testing is or isn't done in the future.

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#### *How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

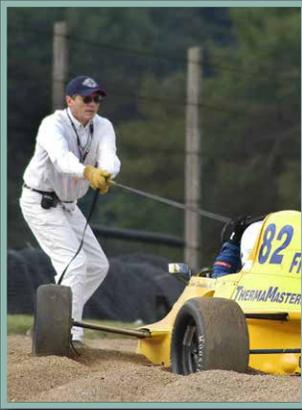
Today, major content providers, broadband operators, and mobile network operators are deploying IPv6 and we are now seeing significant traffic shifting toward IPv6. As each of these large providers' IPv6 footprint and traffic grows the demand for IPv4 addresses will likely be reduced. While this shift will not happen overnight or even in the next couple of years, over the next decade we will move to a majority of traffic being IPv6. Today, Google reports that 4% of its total traffic is IPv6 and this has doubled in less than a year. Comcast recently reported that they are carrying 1 Terabit per second of IPv6 traffic and are anticipating 50% of all endpoints will be IPv6 enabled by the end of 2014. T-Mobile has been aggressively deploying IPv6 with their android handsets and today has more than 8 million IPv6 only handsets causing 27% of the traffic they carry to be IPv6.

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#### *What do you like about the ARIN AC? If you could improve on anything, what would it be?*

I believe the AC does a fairly good job of taking all of the input from interested stakeholders and working with them to figure out number policy which is balanced by the overall principles of the registry system and the individual interests of stakeholders. I believe it would be beneficial to the AC and the Internet community as a whole if there was a way to have more interested stakeholders playing an active role in policy development process. I also believe that the AC does an excellent job of being transparent about its decision making processes. The public meetings are available for any interested party and the AC decision meetings are minuted and published for review by the public.

## Robert Duncan



<p><i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i></p>	
<p><i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i></p>	<p>I am currently employed by Merit Network and expect to retire sometime next year. This will give me much more free time to devote to volunteer work.</p>
<p><i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i></p>	<p>I have no limitations.</p>

***Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.***

I have been in the IT industry for over 35 years. With Nortel Networks for 26 years and currently at Merit Network. I have been responsible for strategy and design of optical, Ethernet and IP network systems. This includes management of IPREG and DNS support.

***Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?***

I am not aware of any conflict of interest.

***The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?***

A Friday meeting in January will not be a problem.

***What differentiates you as a candidate, or makes you uniquely suitable to the post?***

I have a broad background in networking having worked in the past for a network hardware provider, a major commercial financial company and a nonprofit network service provider.

***Describe the top three fundamental principles that guide the ARIN Advisory Council?***

- Develop number allocation policies that represent a consensus of the network community
- Provide allocation of ARIN maintained number resources that is fair and equitable
- Develop policies that encourage that an accurate registry of number resources is maintained

How do you separate your personal opinions from those of your organization and those of the community?

By focusing on the requirements as stated by the group and not on requirements of me or any associated organization. Then evaluating available opinions against the technical and legal requirements.

What is your opinion of the principles outlined in RFC 7020?

I think they are well thought out and have proven over the life of the network to be flexible enough to account for the architectural changes that have occurred.

***How can we further accelerate IPv6 awareness and deployment?***

Finding several success stories to publicize might help. We are at a point that explaining how IPv6 works or is how it is helpful is no longer useful. Showing pockets of actual working deployment might be a better approach.

***What areas of policy, if any, need more attention and why?***

I think a focus on simplification and streamlining is needed. I think there might be too many exception cases and loopholes that were added to address IPv4 exhaustion that can be removed as we transition through exhaustion.

***Do you believe that needs based number allocation is a fundamental principle of the RIR system?***

Yes, I think it looks a lot like RF spectrum allocation. It is a "public resource" that is allocated based on need of various groups of users.

***How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?***

I expect the world outside of North America to move to IPv6 fairly orderly. In North America several select markets (mobile, several cable TV operators) are already moving to IPv6. It looks like much of North America outside these select markets is moving to NAT solutions. One area that might push IPv6 is the "Internet of Things". This looks like a huge quantity of devices that could only be supported on IPv6 space.

***What do you like about the ARIN AC? If you could improve on anything, what would it be?***

I like how the AC operates as a team. I know there are differing opinions within the group, but they work together to provide a final outcome that is usually a good compromise. The only improvement would be to add me as a team member ;)

## David Farmer



*Optionally provide one URL to any one blog, social media, or external website of your choice.*

*Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?*

University of Minnesota

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

No limitations that I'm aware of at this time

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

David Farmer is a Senior Network Design Engineer at the University of Minnesota. He has a member of the University's Office of Information Technology, servicing in variety of roles on the networking technical staff for the last 20 years. He is the Chair of the BOREAS-Net Technical Team, which oversees the day to day technical and operational aspects of a 1500 mile dark fiber DWDM network for the University and other participants. He is the University's primary technical representative to Internet2, the CIC OmniPOP, the Great Plains Network, the Northern Tier Network Consortium, and the Quilt.

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

No conflicts that I'm aware of at this time

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

No conflicts that I'm aware of at this time would prevent me from attending

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

I'm from the end-user constituency within the ARIN region, other candidates come from service providers or other Internet companies. Coming from the end-user constituency provides me a somewhat different perspective from some of the other candidates.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

The Advisory Council facilitates the policy development process and ensures policies are;

1. Fair and Impartial
2. Technically Sound
3. and, Supported by the Community

*How do you separate your personal opinions from those of your organization and those of the community?*

I listen to the community and try to remain open to their persuasion regarding the fairness, impartiality, and technical soundness of all policies. As long as I'm convinced that a policy is fair, impartial and technically sound, then I will try to follow the communities will.

*What is your opinion of the principles outlined in RFC7020?*

I see RFC 7020 representing the beginning of a renewed conversation of principles under which IP resources are allocated. I think it is especially important to discuss these principles as we transition to the transfer market providing the primary source of IPv4 resources, and as we enter the next phase of Internet growth. That phase being the accelerating growth of IPv6 and the continued growth of IPv4 without the benefit of a free pool.

*How can we further accelerate IPv6 awareness and deployment?*

There is no magic here. IPv6 adoption is beginning to accelerate. The primary thing is to continue the programs that are in place, now is not the time to let off.

*What areas of policy, if any, need more attention and why?*

As we transition to the transfer market providing the primary supply of IPv4 resources, policies will need to be adjusted to allow these transfers to occur smoothly. Also, we need to keep an eye out for any issues with IPv6 as adoption accelerates.

*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

I believe that operational need is the fundamental principle under which IP resources should be allocated. That does not mean that I think the policies that we have used to determine that need for the last decade will necessarily serve us well as we transition to the transfer market providing the primary source of IPv4 resources. As a community we need to work together to find a consensus for how to measure operational need as we begin the next phase of Internet growth without an IPv4 free pool.

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*How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

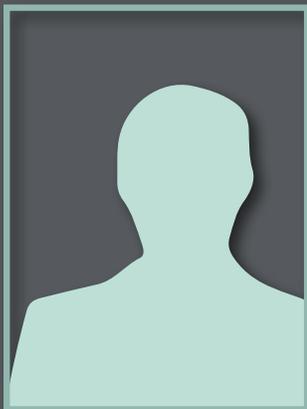
More and more growth will take place in IPv6 and gradually less and less growth will occur within IPv4. There is no single moment of exhaustion, for some in the Internet community IPv4 exhaustion occurred some time ago, for most in the community exhaustion is occurring now or imminently, and yet for others will have sufficient IPv4 resources for some time to come and may never experience exhaustion per se. This unevenness creates issues, and the only thing we can do is ensure a functional IPv4 transfer market, to try to help smooth this unevenness.

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*What do you like about the ARIN AC? If you could improve on anything, what would it be?*

I believe the AC represents the diversity of the ARIN community in many ways. However, one part of the diversity of the ARIN community that isn't represented is someone from the Caribbean. If I could change one thing about the AC it would be to have a representative from the Caribbean.

## Nick Guy



*Optionally provide one URL to any one blog, social media, or external website of your choice.*

*Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?*

No

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

Emergencies

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

Jan 98 through Jan 2001: Northwest Link Manager of Network Operations for a regional ISP in Bellevue WA Managed transition to DSL became very familiar with small IP allocations.

Jan 2001 through Mar 2004 Semaphore Corp. Manager of Network Operations. Business Internet, colo and Managed Network provider. Internet centric.

Mar. 2004 – June 2013 Northwest Open Access Network, NoaNet. Principal Network Architect. Built and operated a statewide network that endeavored to deliver broadband access to rural areas of Washington state.

April 2012 to present: Seattle Internet Exchange, SIX current board member former VP.

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

no

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

yes

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

Think I have a pretty eclectic array of skills and experience over a perhaps smaller swath of the Internet community that might position me to provide some insight into the challenges of the end user while comprehending the needs of the greater good. Been doing this for a while.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

Registration: Pretty self-explanatory. Think the process needs to be as user friendly as possible. I would think that allocations are going to become more thinly spread which means to me that the relative clue level will also become thinner. This means that the process needs to be simple to facilitate efficiency and good netizenship.

Conservation: A great principle. Perhaps more thought needs to go into the notion of what an operational network is. Is a Fortune 500 company network infrastructure more "operational" than an educational institution? Balanced discussion about what is fair seems to be important and outreach to the community about conservation strategies makes sense to me

Routability: See RFC 1925 Fundamental truth number 1.

Stewardship: I like the definition in ISO 20121. The root of this word steward, relating to domestic service rings true to me. It is not about arrogance and totalitarian leadership but about committed care of the order.

ISO 20121 - Event sustainability management system - Requirements with guidance for use; par. 3.20: "responsibility for sustainable development shared by all those whose actions affect environmental performance, economic activity, and social progress, reflected as both a value and a practice by individuals, organisations, communities, and competent authorities."

*How do you separate your personal opinions from those of your organization and those of the community?*

By using my brain. At the risk of sounding flip I see it as a fundamental aspect of the aforementioned stewardship to park ego at the door.

*What is your opinion of the principles outlined in RFC 7020?*

I think it is a good summary of the principles. My opinion is that there is a risk that it becomes anachronistic if settlement free peering continues to decline. This question brings to mind the need to not let personal opinions interfere with the sheparding bit.

*How can we further accelerate IPv6 awareness and deployment?*

I think IPV6 will implement similarly to rapid transit. When the freeway system becomes unusable people migrate to rapid transit. Having said that I think that if auto-

provision of IPV6 and the NIC level will help adoption. I am also a strong proponent of using IPV6 for management networks as a way to get mid-level network engineers familiar with the protocol. Any outreach that can encourage gradual adoption will, I think meet less opposition.

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*What areas of policy, if any, need more attention and why?*

Policy that eases hassle for the end user without compromising the principles is generally something I support.

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*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

Yes, Personally I don't see other options that make sense.

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*How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

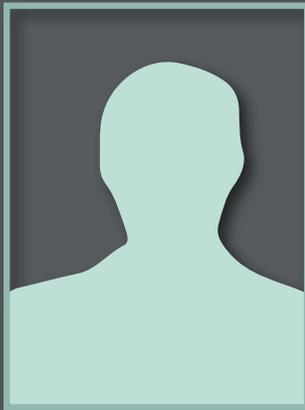
Any growth, or decline will probably be influenced by factors other than IP numbering. Think that there will be considerable growth in private networks and implementation of Carrier Ethernet among other factors like the growth of CDN's. It is my fervent hope that the Internet remains as synchronous as possible and I feel obligated to work toward keeping it that way.

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*What do you like about the ARIN AC? If you could improve on anything, what would it be?*

Think that the advisory council is a great example of the notion of stewardship mentioned earlier. The idea of getting input from a representative and diverse people involved with the Internet seems critical to ensuring that ARIN as a whole stays in touch with the needs of users. My main interest would be that said representation is reasonably diverse.

## David Huberman



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	Microsoft Corporation
<i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	None

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

1999-2000 - ARIN Hostmaster  
2000-2002 - Global Crossing IP Address Management  
2003-2013 - ARIN Hostmaster  
2013 - present - Microsoft IP Address Management

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

No

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

Yes I can attend.  
No it does not pose any conflict or concern.

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

None

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

Very few people know the system more comprehensively than I do, and very few people have the perspective I do. I have 15 years of experience directly in the ARIN community, 10 of which were spent as a senior member of the ARIN registration staff, and the other 5 of which were spent as the IP address manager for global network operators.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

- Objectivity both as an arbitrator of what passes through the PDP, and as a member of a broader community where policy may conflict with the goals of your employer.
- Wisdom to understand when a policy is good for the overall community and when it needs improvement.
- Openness and communicativeness with the community who elected you.

*How do you separate your personal opinions from those of your organization and those of the community?*

Experience and the perspective of having worked more than 2/3rds of my career at a community-scale (rather than a corporate-scale) help considerably in separating the needs of my employer with the needs of the broader community.

*What is your opinion of the principles outlined in RFC7020?*

I agree with section 2, principles of the registration system. I am supportive of investigating the pros and cons of collapsing the RIRs into a single IR, as the days of 5 RIRs being important may (or may not) be past us.

*How can we further accelerate IPv6 awareness and deployment?*

ARIN has done an excellent job over the years of IPv6 outreach, but those efforts are complete. It's now up to individual operators.

*What areas of policy, if any, need more attention and why?*

Section 4 needs a complete overhaul to deal with a post-exhaustion world. Section 8 needs more attention to simplify the transfer process and lower the barriers to transfers.

*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

No - not in a post-exhaustion world. I think needs basis were critical in 1996 when RFC1918 was written. But over time, ARIN policy has become less and less equitable, and more and more favorable only to the large operators (at the cost of the small operators). Needs basis for first timers has been especially constraining of internet growth by new players.

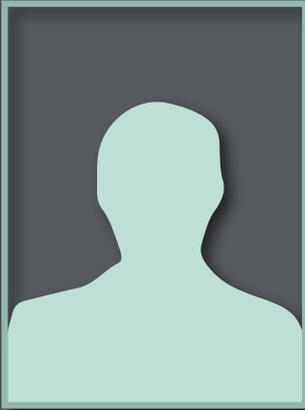
*How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

We live in an increasing internet of things. Growth is inevitable.

*What do you like about the ARIN AC? If you could improve on anything, what would it be?*

So many of those elected to serve have often cared deeply about ARIN and its mission. The AC has also enjoyed spectacular leadership over the last 15 years.

## Timothy Kaufman



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	I work for Net Access LLC.
<i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	I don't foresee any limitations.

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

I work at Net Access as a Network Engineer and in the ISP industry for over 10 years. I have been involved with the NANOG community for approximately 5 years.

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

No

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

Yes I can commit.

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

This would be my first service to the ARIN board and I could represent a new point of view, utilizing my personal experience in field.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

Remain impartial and fair to resource administration. To be technically sound and to be supported by the community.

*How do you separate your personal opinions from those of your organization and those of the community?*

Opinions of myself and other members are important since we form them from our own experiences in the community. However its equally important to be impartial and review those opinions and potentially set them aside to make informed decisions.

*What is your opinion of the principles outlined in RFC 7020?*

I have no direct opinion of the document. It's brief and explains the hierarchy of the RIR's.  
It might be more detailed.

*How can we further accelerate IPv6 awareness and deployment?*

Ipv6 is still somewhat mystical to most and scary to some.  
We need to dispel those notions.

*What areas of policy, if any, need more attention and why?*

Not until i know more about policies are discussed

*Do you believe that needs based number allocation is a fundamental principle of the RIR system?*

Yes

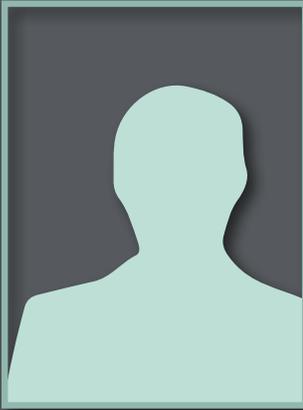
*How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?*

That depends on the time frame we are working with.  
In the end ipv6 is the only way grow beyond the limits of IPv4.  
Careful allocation of the IPv4 routes can allow for the community to fully accept the IPv6 model.

*What do you like about the ARIN AC? If you could improve on anything, what would it be?*

The fact that the policy's are driven by the community at large and not necessarily for profit or by corporate interests.

## L Sean Kennedy



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	XO Communications, ASN 2828 and ARIN Org ID XOXO.
<i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i>	To the best of my knowledge there are no limitations on my ability to attend AC and public policy meetings in person or serve the full 3-year term.

### *Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

2001-Present XO Communications  
1999-2001 Nextlink Communications  
1997-1999 GTE Internetworking  
1994-1997 BBN Planet  
1989-1994 BBN Technologies

I have had responsibility for number policy with XO Communications, Nextlink, GTE Internetworking, and BBN Planet. This work has included number resources from Netlink, Concentric, Internex, Allegiance Telecom (Digex), BBN (Arpanet), BARRnet, and SURAnet. I follow the PPML and attend ARIN public policy meetings where I have spoken for the above employees regarding policies under development.

### Industry Participation

Sitting member of NANOG Program Committee (2013-2014). I have regularly attended NANOG and NSFnet Regional Techs since roughly 1991. I attended IETF regularly from 1995-1999 participating in discussions regarding CIDR and Interdomain Routing, closely followed the development of IPng, and continue to participate in the IETF through mailing lists.

### *Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

I know of no conflicts of interest which could arise in performing my duties were I elected to the ARIN AC.

### *The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

I can commit to attending the AC workshop in Reston, VA in person annually.

### *What differentiates you as a candidate, or makes you uniquely suitable to the post?*

I have worked in the NSP and ISP industry for my whole adult life and have held every role in Network Operations, Network Engineering, and Network Design from Network Operator and IP Administrator through Director of Engineering. As such I have unique technical subject matter and management expertise regarding IP networks and not

only understand the intricacies of IP number policy, but also the routing of those number resources and the Interconnection between networks which ensures I will not lose sight of the big picture of how IP numbers are used when developing policy.

### *Describe the top three fundamental principles that guide the ARIN Advisory Council?*

The three principles which guide the AC are the Principles of Internet Number Policy from the ARIN Policy Development Process. These are to enable fair and impartial number administration, technically sound, and supported by the community. I believe the AC should also ask the community whether a proposed policy serves a specific need before adding to the NRPM and should ensure that draft policies are as simple as possible, unambiguous, and provide a policy model that LIRs can also follow.

### *How do you separate your personal opinions from those of your organization and those of the community?*

I fully embrace the principle of community support for policy development, so am willing and able to set aside my personal opinions and those of my employer to vote for a policy that has community support. I think that having multiple AC shepherds for a proposed or draft policy ensures that community consensus is accurately reflected in the policy language. Lastly I am a member of the community and my employer is an ARIN member, so I may speak wearing those hats at the microphone during public policy discussion, but will clearly identify that I am doing so.

### *What is your opinion of the principles outlined in RFC 7020?*

RFC 7020 is a much more accurate representation of Internet Numbers Registry System than RFC2050. It clearly separates technical responsibility for the Internet Protocol, administration of Internet Numbers, regional responsibility for number policy, and Internet Operation. The main limitation of the RIR system are those cases where networks and organizations span multiple regions. RFC 7020 does not directly address coordination between the RIRs and I believe additional coordination between the policies bodies outside of the NRO NC could be beneficial, but I feel that RFC 7020 captures responsibility for Internet Numbers as its understood today.

### *How can we further accelerate IPv6 awareness and deployment?*

I think that ARIN could improve upon its community outreach. ARIN on the Road is run like a mini-ARIN meeting including department presentations and status reports, in addition to a policy update from the AC. ARIN should include additional techni-

cal content, such as tutorials or presentations regarding IPv6 deployment to bring communities up to date on IPv6. The ARIN Board of Trustees can assist by keeping IPv6 record maintenance fees low and allowing larger IPv6 space allocations having to pay a higher level member fee.

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***What areas of policy, if any, need more attention and why?***

I feel that the entire NRPM receives a lot of attention in the public policy process. The areas which the AC needs to focus on are resource transfers and IPv6 policy. This includes inter-region transfers as well as the justification of acquired resources. When ARIN IPv4 resources are exhausted, I would support streamlining the IPv4 section of the NRPM, but the AC should first apply its attention to the policies the community needs.

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***Do you believe that needs based number allocation is a fundamental principle of the RIR system?***

Needs based allocation is a necessary principle for the limited resources of IPv4 addressing and 2-byte ASNs. It is an important principle for IPv6 and 4-byte ASN assignment by the RIRs, but where we have more resources additional weight should be given to the operational considerations of a policy.

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***How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?***

The Internet will continue to grow globally because we now have two generations of individuals who are accustomed to interacting with the Internet on a daily basis. In addition the increasing availability of mobile Internet service world wide and more Internet enabled devices will further increase the size of the Internet. The deployment of IPv6 may be driven from those two areas -- mobile ISPs require large amounts of IP addressing and providers like T-Mobile have shown its possible to provide IPv6-only service to handsets. And a larger Internet of things will not only require more addresses, but different routing strategies, and possibly end to end connectivity instead of via NAT.

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***What do you like about the ARIN AC? If you could improve on anything, what would it be?***

I have been encouraged by the recent work of the AC to clean up the NRPM and remove unneeded policies. I feel the Service Provider community is not as active as it should be in the ARIN policy process, despite the success of regularly including public policy discussions at NANOG meetings. As such I have felt that some draft policies were not as technically sound or simple for LIRs to implement, so have spoken up on such topics at public policy discussions. I would like to encourage further cross-pollination between the Service Provider community and ARIN, including AC participation in the NANOG BCOP track, and do additional outreach to Service Providers.

## Leif Sawyer



*Optionally provide one URL to any one blog, social media, or external website of your choice.*

*Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?*

General Communications, Inc.  
Anchorage, Alaska.

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

I have no known limitations, and have been attending the public meetings for a number of years, and remotely joining even longer.

I have been given specific permission from my family and workplace for my participation on the ARIN AC, should I be elected.

*Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on the ARIN Advisory Council.*

General Communications, Inc: Employed for over 19 years, over 15 in network engineering and architecture, over 12 years as the lead IP administrator, and ARIN DMR. Lead IPv6 evangelist at GCI, and primary IPv6 deployment architect.

Lead VOIP IP architect

Lead IP Security Engineer

CableLabs focus group participant: MSO-IPv6, HIPNET, IPPM.

Active ARIN member since 2006

*Are there any associations (fiscal or otherwise) that you, or organizations that you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?*

I have no conflicts of interest.

*The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?*

I can commit to this and foresee no conflicts or concerns. While it is a bit of a commute from Alaska, I love travel. (And at least I'm not in Hawai'i!)

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

I have no known limitations, and have been attending the public meetings for a number of years, and remotely joining even longer.

I have been given specific permission from my family and workplace for my participation on the ARIN AC, should I be elected.

*What differentiates you as a candidate, or makes you uniquely suitable to the post?*

As an engineer that has helped shape the foundation and growth of the entire IP-based business within my company, I've been witness to many changes in the industry, and how each of those changes has impacted the telecommunications world within my state. Alaska is a unique and challenging area due to the physical

size, geography, climate, the lack of any infrastructure between the majority of population centers. Interconnecting the various villages requires and extreme amount of teamwork between multiple groups during both implementation and operations.

Secondly, outside of the technical space, I am an actor and musician, participating in many community-produced plays, musicals, concerts, and even operas, from walk-ons to lead roles. With over 100 different shows performed, I have established myself as a consistent, capable, and conscientious presence on stage, as well as being adept at set construction, lighting and sound design, and fight choreography.

Being able to function well on a team, whether in leadership or in support positions is critical to success, and I believe that my skills from both my technical and non-technical side allow me to do that.

*Describe the top three fundamental principles that guide the ARIN Advisory Council?*

i believe that the fundamental principles are to shepherd community-approved policy changes; verify that they're cohesive and consistent with the global RIR guidelines, best practices, and existing policies; and to implement them in a transparent, verifiable manner, such that resource allocations can be performed in a fair, impartial, and consistent manner.

*How do you separate your personal opinions from those of your organization and those of the community?*

I believe that my theatrical training provides a large base for this skill.

Being able to build up a character, and then recall that character when needed, and providing those characters with specific goals and emotional honesty allows them to be fully-fleshed instead of one-dimensional.

This same tactic can be used to provide internal representations of "personal-me", "worker-me", and "community," and allow for different wants and needs to be maintained and even dialoged.

*What is your opinion of the principles outlined in RFC 7020?*

As the lead IP administrator for my company, I follow the goals as outlined RFC7020 (and 2050, previously) during the processing of requests, and make sure that my support team also follows them.

As an example, without an accurate accounting of the allocations, our internal teams cannot troubleshoot routing issues, identify mis-allocated, conflicting or 'stolen' netblocks, or provide forecasting of network growth per business unit.

Just as it is important for my company to provide this internally, it is even more important at the regional level.

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***How can we further accelerate IPv6 awareness and deployment?***

At this point, nearly everybody has heard of IPv6, but they may not be aware of the impact it will have on them.

End-customers have yet to understand why it can be helpful for them to have IPv6 (NAT is bad!) but the flip-side of that coin is that they also need to understand the security aspects that come from having everything on their network potentially internet-accessible.

Businesses need to understand the financial impact of the no-IPv4 future, and that IPv6 ensures their continued growth and visibility on the Internet.

So it continues to be an issue of education, outreach, and advocacy.

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***What areas of policy, if any, need more attention and why?***

Based on the history of discussions on PPML, it's nearly always about balancing the needs of small business requirements vs. large businesses. ARIN-DRAFT-2014-17 was written in response to help address the balancing, but it still doesn't do enough to prevent abuse.

Anti-abuse policy is the second biggest issue, but that is largely a function of language cleanup in existing policies to limit loopholes, or clarify language for the ARIN staff who have to interpret and implement the policies.

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***Do you believe that needs based number allocation is a fundamental principle of the RIR system?***

I think that needs-based allocation is the closest thing to a fair distribution of a limited resource that we've got. And fairness should always be fundamental.

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***How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?***

IPv6 is the only way that the Internet can continue to grow easily and successfully.

There are multiple address-translation technologies, but nothing will scale up to the level that is required for the "Internet of Things" with such a large scale of devices coming online.

IPv4 transition technologies are short-term, high-expense solutions that shift the responsibility of running the network smoothly away from the engineering staff (simple, optimal, scalable, manageable) to the management (capital vs operational expense, forklift upgrades, corporate retraining) which is not the right way to solve the problem, or to allow businesses to grow long-term.

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***What do you like about the ARIN AC? If you could improve on anything, what would it be?***

I like that the AC is, for the most part, friendly, open, and approachable. I can only hope that I would be able to maintain the balance and level of professionalism and openness that the AC has.

## Chris Tacit



<p><i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i></p>	
<p><i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i></p>	<p>No.</p>
<p><i>Describe any limitations on your ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</i></p>	<p>There are no limitations on my ability to attend AC and Public Policy Meetings in person or to serve the entirety of a three-year term.</p>

***Please provide a brief CV highlighting involvement in organizations showing relevant experience for sitting on 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.

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

My professional experience includes 33 years in the technology and communications fields, including over 25 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 20 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 also serve on the boards of a number of not-for-profit organizations in Canada.

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 makes me very well suited to advance the contributions made by the AC in the numbering policy development process.

***Are there any associations (fiscal or otherwise) that you, or organizations that***

***you are currently involved with, which may give rise to conflicts of interest? If there are such conflicts please advise how you propose to handle them?***

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 a number of boards of Canadian not-for-profit organizations. The only such organization that addresses Internet issues is the Internet Society Canada Chapter. 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 were 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.

***The AC meets every year on a Friday in January, in Reston, VA for a workshop to review AC practices and policies. Can you commit to attending in person, and does that pose any conflict or concern?***

I can commit to meeting in person. This meeting does not pose any conflict or concern.

***What differentiates you as a candidate, or makes you uniquely suitable 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 an 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.

***Describe the top three fundamental principles that guide the ARIN Advisory Council?***

The top three fundamental principles that guide the ARIN Advisory Council are: (1) ensuring fair and impartial number resource administration; (2) evaluating policies for Internet number resource management for soundness against three overarching technical requirements: conservation, aggregation, and registration; and (3) ensuring that changes to policy have a strong level of support in the community.

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***How do you separate your personal opinions from those of your organization and those of the community?***

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.

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***What is your opinion of the principles outlined in RFC 7020?***

I fully support the principles outlined in RFC 7020, including the goals, structure, technical considerations, Internet numbers registry evolution, summary of changes since RFC 2050 and security considerations described in that document. I also support the ongoing work related to the evolution of the Internet numbers registry system.

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***How can we further accelerate IPv6 awareness and deployment?***

I believe that traditional and social media advertising aimed at consumers and organizations could be a useful tool in creating bottom-up awareness and demand for faster and more efficient deployment of IPv6.

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***What areas of policy, if any, need more attention and why?***

Due to the fundamental nature of the policy development process which I wholeheartedly support, the Number Resource Policy Manual is modified in a piecemeal manner over an extended period of time. While this approach is a necessary consequence of the bottom-up, multiple stakeholder approach to policy development that focuses on very specific and targeted policy proposals, it also results in increased complexity and ambiguity being introduced into the NRPM. I believe that this unintended consequence needs more explicit attention so that the NRPM can be streamlined and simplified as much as possible on an ongoing basis, without changing the fundamental manner in which policy is developed. Increasing the clarity of the NRPM in this manner on an ongoing basis is particularly important to ensure that ARIN policies are as clear as possible and can be readily implemented despite the exhaustion of IPv4 address space.

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***Do you believe that needs based number allocation is a fundamental principle of the RIR system?***

Yes, needs based number allocation is an absolutely fundamental principle of the RIR system.

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***How do you see the Internet continuing to grow in the face of IPv4 address exhaustion?***

The ever growing demand for addressing resources in the face of IPv4 address exhaustion will lead to a critical mass being reached in the demand for IPv6 address space, such that the migration to IPv6 will accelerate to meet demand. However, in order to minimize shortages that could be encountered along the way as not all organizations migrate to IPv6 at the same pace, traditional and social media advertising aimed at both consumers and organizations could be a useful tool in creating bottom-up awareness and demand for faster and more efficient deployment of IPv6 by those organization that will have to do it in any case at some point in time.

What do you like about the ARIN AC? If you could improve on anything, what would it be?

I greatly appreciate the collective knowledge and wisdom that is available to contribute to the policy development process due to the diversity of representation on the ARIN AC. I also like the role that the AC has within the broader policy development process and the collegial nature of the AC. I would not advocate any major changes in the manner in which the AC operates at this time. I would like to explore if there is way that the Number Resource Policy Manual can be streamlined and simplified on an ongoing basis to a greater degree and the role that the AC might have in such a process.



2014 NRO NUMBER COUNCIL

## Steven Goodman



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	Marquette University - Department of Mathematics, Statistics & Computer Science
<i>Are you available to serve the entirety of a 3-year term?</i>	Yes - it would be my honor
<i>Describe any concerns or limitations on your ability to travel to attend ARIN and ICANN meetings in person.</i>	None known

### *Why do you want to serve on the NRO NC, and what goals do you want to accomplish?*

Having been involved with the numbering since 1988 I personally saw the potential for the Internet. I served as coordinator for the .US domain, was a heavy contributor to the UUCP project, I am published in the subject and additionally published in the "Internet Managers Phonebook" multiple times. I co-authored the PPP protocol, and worked with KA9Q on IP packet technologies over 2M radio. As far as goal, not only do I want to "give back" to the community - I would like to leverage my expertise to drive IPv6 forward (I have worked on and off with Dr. David Clark on this back in the 90's).

### *What, if any, conflicts of interest might arise for you as an NRO NC member? Specifically, do you serve in what could be perceived as any Internet governance roles, provide any services directly or indirectly to ARIN, or represent any significant interest from the community?*

None that I am aware of

### *What is your record of serving the Internet community in the ARIN region?*

- \* Coordinator .US domain
- \* UUCP Project member
- \* Ran the 2nd largest NNTP site in the world
- \* Co-Authored PPP Protocol
- \* Contributor to the ELM project
- \* Worked with Cricket Liu on DNS
- \* First ever UNIX based "BBS" system that leveraged SLIP to give member access to Internet resources
- \* Mail forwarder to AOL (Internet in/out)
- \* Helped develop INC (Internet Connect) one of the first ISPs.

### *What differentiates you as a candidate, or makes you uniquely suited to serve on the NRO NC?*

Years of experience and personal expertise.

### *How do you propose to select an ICANN Board Member? Does there need to be any change in that selection process?*

ICANN board member should have real life "business experience" in understanding the needs of the commercial industry with Internet Resources (above and beyond the obvious). No change required in selection process.

### *Provide a brief biography of recent experience, associations, and affiliations relevant to serving on the NRO NC, including names of organizations, positions held, specific duties, and dates of service.*

From the technology perspective one of the leading experts bringing a diversity of expertise to a technology. Contributed to several of the largest technology design & implementations completed (leveraged today at locations such as General Electric and the People's Republic of China). Numerous years of experience have developed extremely fine-tuned instincts in technology, enabling the ability to transform large and complex problems into simple solutions. Considering my business skills and prospective, I consider technology as a strategic tool. Passionate in regards to grace & simplicity; able to reduce break apart large models to solve complex problems. Develops systems and processes around real world requirements and the ability to be agile and react to new needs rapidly. Six Sigma Certified, SOX, HIPPA, HITECH, RED FLAG expert - able to deal with large regulatory organizations with ease.

### *In light of the ongoing transition from IPv4 to IPv6, do you have experience do you wish to share with the community that is noteworthy in terms of IPv6 adoption?*

Early adopter of Internet 2 (1990's)

### *What is your view of the existing bottom-up, self-governance model and structure of the Regional Internet Registry (RIR) system? Do you believe there are other models or structures that would work better?*

I am a strong believer in placing the management of an asset close to the consumers of these. RIR system works well - however - I would add greater MUCH greater flexibility on moving across RIRs to insure those that consume have what is required.

## Ron da Silva



<i>Optionally provide one URL to any one blog, social media, or external website of your choice.</i>	<a href="https://www.linkedin.com/in/rondasilva">https://www.linkedin.com/in/rondasilva</a>
<i>Bearing in mind that you run and serve as an individual, rather than representing an organization, is there an organizational affiliation you'd like to state?</i>	Time Warner Cable
<i>Are you available to serve the entirety of a 3-year term?</i>	yes
<i>Describe any concerns or limitations on your ability to travel to attend ARIN and ICANN meetings in person.</i>	none, except for occasional conflicts with my family or work responsibilities

### *Why do you want to serve on the NRO NC, and what goals do you want to accomplish?*

I have served on the NRO for the past term and appreciated the opportunity to represent the ARIN region especially during a time where a lot of changes are afoot. I would like to serve another year to help provide stewardship of the addressing resources, especially as IPv4 runs out across the internet; the IANA function oversight is relegated to the industry for accountability; and various factions across the world attempt to assert their role in the processes and policies that govern and shape the open, transparent, bottoms-up, multistakeholder governance model.

### *What, if any, conflicts of interest might arise for you as an NRO NC member? Specifically, do you serve in what could be perceived as any Internet governance roles, provide any services directly or indirectly to ARIN, or represent any significant interest from the community?*

I am employed by a for-profit company (Time Warner Cable) that is a subscriber of ARIN services. I don't believe this will directly create a conflict of interest, as it hasn't to-date. However, should a situation arise where those interests are at odds, I would simply reclude myself from that matter of concern. However, the majority of the participants on the NRO NC, Boards and various working groups and advisory councils across the RIR fabric have similar potential for a conflict of interest, so this would not be anything new in my serving in this role.

### *What is your record of serving the Internet community in the ARIN region?*

I have previously served 6 years on the ARIN advisory council, 4 of which I served as chair and 2 of which I served as vice chair.

I have served 4 years on the NRO NC on behalf of the ARIN region.

I have nearly 20 years of experience in the internet industry and have been a prominent participant within the ARIN region via PPML, industry standards bodies and forums.

### *What differentiates you as a candidate, or makes you uniquely suited to serve on the NRO NC?*

I have experience both as an ARIN AC leader and as a member of the NRO NC and would provide continuity with another term.

### *How do you propose to select an ICANN Board Member? Does there need to be any change in that selection process?*

I'm ok with the selection process. In fact, I've served two years on the interviewing committee and the qualification review committee while on the NRO NC. One

challenge that we have faced is trying to synchronize calendars with the ICANN Board and their desire to have sufficient time to review recommended candidates. I think we have been much more successful at that synchronization with more frequent and specific communications between the Board and the NRO NC.

### *Provide a brief biography of recent experience, associations, and affiliations relevant to serving on the NRO NC, including names of organizations, positions held, specific duties, and dates of service.*

I currently lead Network Engineering, Architecture & Technology Development for Time Warner Cable as Vice President. I have previously held various leadership, technology and operating roles with the company as well as AOL and Sprint. Being in the internet industry, I have an appreciation for what is required to successfully operate an internet business and a gratitude for all the selfless volunteers and contributors that contributed to the success of this industry. I see my involvement in the NRO as a small way to give back to that industry.

### *In light of the ongoing transition from IPv4 to IPv6, do you have experience do you wish to share with the community that is noteworthy in terms of IPv6 adoption?*

My team at Time Warner Cable has been at the forefront of the transition for a significant portion of the US economy. We have fully embraced a 3-fold strategy to a) enable dual-stack everywhere we can b) to develop conservation and reclamation methods to extend the utility of IPv4 as long as possible and c) to actively promote and encourage IPv6 adoption in the consumer electronics, content delivery and services industries. I have some great leaders in my organization that I have been able to put out in the marketplace and really impact the success and acceptance of the transition in meaningful ways.

### *What is your view of the existing bottom-up, self-governance model and structure of the Regional Internet Registry (RIR) system? Do you believe there are other models or structures that would work better?*

The temptation is that some top-down process would be much more efficient. But what would begin as a well intended benevolence would unfortunately also invite abuse, harm and malignity from others once such a framework was in place. I strongly believe that the ongoing success of the internet as a platform and technology that continues to transform our global infrastructure, it must remain open, transparent, self-governed with a bottoms-up multistakeholder process.