



DNS-OARC

Domain Name System Operations Analysis and Research Center

Members report, Nov 2018 - Apr 2019

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Dear OARC Members,

2018 was a year of significant change for OARC, with a complete overhaul of how we operate our infrastructure, a new approach to funding our workshops, further significant additions to our open-source DNS software tools repertoire, and the second year running in which OARC made a small surplus on its operating costs. We were pleased to run [OARC29](#) in Amsterdam in conjunction with **CENTR** at RIPE77, making it our biggest workshop ever. Slides and Video of OARC29 are available via the [workshop site](#) and the [OARC YouTube Channel](#).

The end of 2018 saw OARC participate in a special data collection for the rollover of the Root Key-Signing Key, and complete VeriSign-funded software development of RSSAC040-compliant data anonymization tools. The first quarter of 2019 got off to a busy start, with meetings for both Board Retreat strategy and Staff All-Hands planning. While in the Bay area in February, we also completed a major consolidation and re-build of our core infrastructure in Fremont, and we're now hosting the acclaimed *DNSVIZ* tool in partnership with **BYU** and a donation from **VeriSign**.

1. Bangkok OARC30 Workshop

Our spring workshop, [OARC30](#), is imminent, and we are excited to be going to Bangkok, our first time in Thailand and only our second-ever workshop in the Asia-Pacific region ! We are once again being hosted by **ICANN**, in conjunction with their DNS Symposium, (IDS) Registry Operations Workshop (ROW), and Global Domain Days (GDD) events. The OARC30 agenda is now fully confirmed, and available with full meeting details, at:

<https://indico.dns-oarc.net/event/31>

Registration currently stands at 142 attendees, including many from key regional players not previously represented at OARC. Our agenda has been co-ordinated with ICANN's [IDS](#), giving you 4 days of non-overlapping, relevant DNS content. Attendance at OARC30 is free to all, thanks to ICANN's generous Host sponsorship. There will be an opportunity to submit lightning talks for OARC30 immediately before the workshop, and we still have room for additional sponsors - please contact Denesh via [<sponsor@dns-oarc.net>](mailto:sponsor@dns-oarc.net) if you are interested.

OARC30 would not be happening without the generous support of our sponsors:

- **ICANN** (Host)
- **APNIC** (Associate)
- **Diamond Key Security** (Contributor)

the hard work of our volunteer 2019 Programme Committee:

- Shumon Huque (**Salesforce**), Chair
- Anand Buddhdev (**RIPE NCC**)
- Ralph Dolmans (**NLnet Labs**)
- Robert Edmonds (**Fastly**)
- Dave Knight (**Snake Hill Labs**)
- Jan Vcelak (**NS1**)
- Jake Zack (**CIRA**)
- Ondrej Sury (Board Liaison)

and local assistance from THNIC. (And thank you to everyone for your co-operation and forbearance with the moving target of Thai visa requirements.) If you are attending OARC30, we wish you a safe and smooth journey.

2. OARC Strategy Retreat and All-Hands

Every two years the OARC Board sets aside several days to review OARC's status and progress, and to set the long-term strategy and objectives needed to sustain and evolve the organization. Our previous retreat was in February 2017, so it was time for another this February, which we held at **APNIC's** offices in Brisbane, Australia. As you may be aware, the OARC Staff consists of 6 contractors spread across as many states and countries, and as with the Board, it's helpful to gather everyone together in one place every so often. We therefore took the chance to have a Staff All-Hands, at **ISC's** office in Redwood City, California, a couple of weeks after the Board retreat, with the aim of having the Staff work on a plan to execute the strategy output from the Board.

One of the major challenges for OARC over the past couple of years has been lack of growth in OARC's Membership base and revenues. Much of this has been driven by ongoing consolidation in our industry sector, and tackling it was firmly on the Board's strategy agenda. After considering the options and landscape, OARC's strategy for the next ~2 years will be to build on its stable base, to retain membership, and to sustain the capacity for opportunistic growth as it arises, rather than setting ambitious or risky growth targets which may prove challenging to execute.

An important objective meantime will be to diversify our revenue sources, so that these comprise a balanced mixture of subscriptions, workshop registrations & sponsorship, grants & donations; and are not overly dependent on low-growth membership subscriptions. We also have some ideas for new and premium services which we believe will be of value to a key subset of our membership, and want to improve the value for all Members, especially those who support us at the higher tiers.

Various findings, decisions, proposals and plans from these sessions are detailed in following sections of this report.

OARC would like to extend its thanks to **APNIC** and **ISC** for the generous use of their office space for our internal meetings.

3. Upgraded Member Portal

We are pleased to announce the Beta release of our new portal for accessing your Member services. Our current portal has served us well, but is over a decade old, and we wanted our Members to have a better user experience and a more flexible platform. Highlights include a Directory listing all OARC member organizations and their contacts, a new simpler way to reset your password, and a more general framework for handling member-like relationships and additional services.

The new portal has been in development and internal/volunteer testing for about a year, but we would value your feedback before we flip the switch.

The Beta version is located at: <https://dev.dns-oarc.net/portal2-beta/>

To log in, please use your email address from the current portal as your username/login. If you need help with the email address, let us know. You can keep using your existing password (there is also a password reset link for those that need it). Once you login, there is a landing page with helpful Links and News and a navigation menu on the top. Depending if you are an Admin or a Contact for your Organization, your menu and options will be slightly different.

We encourage you to log in and test it out, if possible before OARC30 on May 12-13. We plan to go live the last week of May (at which point any changes made to the Beta portal data will be reverted). If you find any issues, or have suggestions, please contact us via <admin@dns-oarc.net>. Later in 2019 we plan to add new features and greater integration with the other platforms we use to provide Member services.

4. New Members and Upgrades

Please join us in welcoming the following additions and upgrades to OARC Membership in the last 6 months:

- **VeriSign** \$25k Donation for Software Development
- **Akamai** upgrade from Silver to Gold
- **CIRA** upgrade from Bronze to Silver
- **Ofcom** \$5.5k Donation/Supporter for Data Access
- **PIR** as a re-joined Bronze Member
- **Deteque** as a Bronze Member
- **Toybox** as a Blue Member
- **IIFON** as a Supporter Member
- **NSRC** as a Supporter Member
- **SOX** as a Supporter Member

We unfortunately lost two Members in this period, and are sorry to see **CORE** and **JAS Advisers**, and six Supporters, depart. Paying new Member sign-ups remain slow compared with pre-2017 levels, though as you can see from the above things have been picking up a bit lately.

One idea that came out of the retreat was to try and address the challenge OARC has of the significant proportion of Supporters who sign up, but then never contribute as promised to OARC, and who are terminated after a year of enjoying benefits without reciprocation. The proposal is that all Supporters would require the endorsement of an existing paying Member before sign-up – we'd appreciate Member input on whether you think this would be helpful and practical, or not.

As ever we would appreciate your help in spreading the word and plan to introduce a discount scheme for any new Member referrals you can send us. To help you do this, you may find our [Brochure](#) and [Briefing](#) documents useful.

Please contact Sue Graves via [<admin@dns-oarc.net>](mailto:admin@dns-oarc.net) if you have any questions and/or would like to upgrade your membership or donate to support our mission and the DNS community.

5. Systems

OARC has taken over the role of hosting the popular *DNSVIZ* DNSSEC debugging tool. This was created by Casey Deccio at Sandia Labs, now of Brigham-Young University (**BYU**), and for the past few years it has been hosted by **VeriSign**. VeriSign has kindly donated the server hardware to OARC, and *DNSVIZ* will from now be operated jointly by OARC and Casey – we will provide the hosting and systems support, and Casey will continue to own and develop the code. As part of the migration it has been necessary to take the query history database offline a couple of times – we apologize for the inconvenience, but once this migration work is completed it will allow us to offer an improved service, and we plan to add some new premium capabilities to *DNSVIZ* before the end of this year.

During the second week of February, Matt Pounsett visited our main Fremont hosting site, and did a major re-build of our racks and equipment there. This included re-arranging the racks to a new standard layout with best-practice cable management, installing new Ethernet switches, various hardware upgrades, re-balancing power consumption, purging much old deprecated hardware, and resolving various niggling issues left over from last year's change-over. The result is a much more manageable and future-proof core infrastructure.

Matt also did a short visit to our Canadian secondary site (generously hosted by **CIRA** at their Ottawa facility), and again completed outstanding rationalization work there, giving us a more stable and manageable location for our dataset mirror and site diversity.

See Matt's section of the Engineering report for more detail of this and other OARC Systems developments.

6. Software Development

dnperf is a tool to gather accurate latency and throughput metrics for DNS services. It found a new home at this year at DNS-OARC, and we are grateful to **Nominum/Akamai** for their years of development of this tool and enabling OARC to take ownership of it. We've since done two new releases of *dnperf*, re-working the code and rolling up bug fixes from various other sources. Future work we have planned for *dnperf* includes a clean-up of library dependencies, and hopefully adding TCP and TLS support.

Thanks to another generous grant donation from **VeriSign**, we were able to add new plugins to the *dnscap* network capture utility to support various kinds of IP de-/anonymization which we hope will help our members comply with evolving privacy requirements, outlined in the [RSSAC040](#) document.

The v2.8.0 release of the *dsc* DNS Statistics Collector adds a new *response_time* indexer (funded by **NIC.AT**), which can track queries and report the time it took to receive the response, together with new maxmindDB (GeoIP2) support.

Other new releases among OARC's software family include *dsc-datatool* v0.04, *dnshit* c0.9.7, and *dtool* v1.99.4. See Jerry's section of the separate Engineering report for more detail of these and other OARC Software developments, including improvements to our development platform, continuous integration, and testing processes. You can also find the latest about our software

development activities in Jerry's regular newsletter, the latest edition of which is available at [Development Update #1902](#), and a list of all our software is here:

<https://www.dns-oarc.net/oarc/software>

Finally, don't forget that OARC can develop new, or enhance features of existing, tools via a custom for-hire development contract. OARC Members will receive priority for such work, and at a discounted rate depending on their membership tier.

7. DITL, Data Collections and Storage

OARC has successfully conducted two "*Day In The Life of the Internet*" Data Collections since October: a special collection for the Root Key Signing Key rollover just before OARC29, and our regular collection took place during April. A final additional KSK Rollover dataset has additionally been collected by the Root Operators, and is pending upload. We would once again like to thank all the Root Operators and other contributors that uploaded data. Processing and availability of these data-sets is currently on-hold until we can perform some maintenance (see below) work on our file servers, but we hope to have these ready in June.

We are nonetheless facing some challenges in growing and maintaining our data-set. Although we've had a regular annual refresh cycle for raw storage capacity, the underlying servers which support the disk arrays are aging, and there have been a number of recent hardware issues and file-system corruption incidents which suggest a more radical re-architecting is required.

Matt Pounsett has proposed a new approach which was reviewed at the recent Board/Staff meetings, this will involve clustering a larger number of smaller servers to give better flexibility and more cost-effective scaling, and using 3rd-party cloud instead of diverse site locations to provide a secure mirror. While the 2019 budget allows for us to start building this new architecture, it's possible we may need to accelerate this process depending on the remaining stability and life-cycle of the existing data store, which could require us to dig into our reserves and/or call for external special funding.

Although we do not intend to use external cloud services for processing of data, clearly moving to these for backup mirror purposes requires a change to OARC's Data Privacy model, and this is one reason the Board Privacy sub-committee has been formed.

8. Finances and Governance

Resolutions passed at the OARC29 2018 AGM saw the completion of the process to convert OARC's Board of Directors from Member-appointees to serving in an individual capacity, together with some protective anti-capture measures, and the Board has since then been working very effectively on this basis and the stronger continuity it brings.

2017 was the first time in some years that OARC broke-even fiscally, and the good news is that again for 2018, we made a surplus, some \$39k on total (unaudited) revenue of \$778k. Although the 2018 budget targeted significantly larger revenue growth, due to various developments beyond our control and market conditions, we were unable to achieve this, though we were able to control costs in line with revenue. The revenue and expenses for 2018 are thus very similar to 2017.

For 2019, the strategy decision was to go for modest growth, and the budget for 2019 targets revenue of \$815k, or an around 5% increase. The Board strategy also set some medium-term objectives for OARC revenue and reserves growth, in particular to 5% annual revenue growth in 2020, towards \$900k revenue by 2021, of which at least 10% of which should come from diversified services. Growing OARC reserves to ensure the organization can continue to function though any major shortfall remains important, and as well as some clarification changes to OARC's existing

[Reserves Policy](#), the Board set the objective of building 6 months' operations worth of cash reserves by 2022.

It has been 5 years since the last substantive increase in OARC Membership subscriptions, and one output from our strategy sessions is we believe it would be appropriate to increase these, in line with inflation indices, effective 1st January 2020. Between now and then, we will be introducing a multi-year discount scheme, which will allow Members to both lock in the existing fee level, and obtain a discount for committing to Membership 2 or 3 years in advance. Any Member who wishes to renew their 2019/20 Membership before end 2019 will also be able to do so at this year's prices. In order to make your budgeting easier, we are also now setting the policy that fee increases will happen every 3 years. The exact level of fees for 2020 onwards is yet to be determined, and will be presented for Member approval at the OARC31 AGM in October, but we wanted to give Members as much notice as possible.

Work will also be done on better documenting OARC leadership Board and Officer roles and responsibilities, to ensure that OARC's smooth governance and continuity is not overly dependent on particular individuals.

Finally, an important retreat outcome was the establishment of two Board sub-committees:

- An **Audit** sub-committee, tasked with reviewing OARC's auditor arrangements and finding a potentially better match
- A **Privacy** sub-committee, tasked with reviewing the challenges of OARC's data collection in a cloud-enabled, post-Snowden GDPR world, and generating new policies which will allow us to operate effectively in this environment.

9. [Future workshops](#)

[OARC31](#) will take place in Austin, Texas, USA on the 31st October and 1st November, co-located with and immediately after NANOG77. Please note the **dates have changed** from those originally published - due to venue issues beyond our control, we are now running concurrently with the [ARIN44](#) meeting. We realize there may be some small overlap between OARC and ARIN attendance, and apologize for any inconvenience this may cause you.

The 2019 AGM will also take place in Austin, on the afternoon of Friday 1st November. Formal notice will be posted by the 27th August. We are seeking qualified candidates for the OARC Board to be elected at the AGM, and for the 2020 Programme Committee, please consider if you would be willing to be nominated.

For 2020 and beyond, our strategy sessions considered the challenges that arise from our policy of rotating co-location of workshops between RIPE, NANOG and ICANN meetings. While it is clear Members prefer and benefit from co-location, it can make it unpredictable from year-to-year where exactly we finish up. We are therefore proposing that we switch from two 2-day workshops per year to two 2-day plus one additional 1-day workshop. We would then always co-locate with a specific event at the same time of year, e.g. NANOG in Q1, ICANN IDS in Q2, and RIPE in Q3. While this would still circulate geographic locations and bring in the widest possible attendance, it would allow us to plan, co-ordinate and commit with these partner organizations on a more predictable and long-term basis. Clearly this approach needs support from the community, in particular our Members, attendees, speakers and PC/volunteers, and before we commit to the new scheme, or an intermediate transition to it in 2020, we would appreciate feedback.

Keith Mitchell
OARC President
May 2019