NLnet Labs

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Labs

Annual Report
2008

Colophon

This document was prepared with the OpenOffice and NeoOffice software using the OASIS open document type.

Typeface: Helvetica Neue and Gill Sans.

Lectori Salutem

We are happy to present NLnet Labs Annual report 2008. It is intended to present an overview of Labs' various activities to those who support NLnet Labs financially, through grants or support contracts, and for those who have shown a general interest in our activities.

The first half of this document presents an overview of our activities, while the second half presents details about the organizational and financial aspects of the foundation.

NLnet Labs

The Internet's strength is that it allows people to connect and communicate with all others on the Internet without, in theory, the need for special provisions elsewhere than at the end-nodes. This allows people to publish, provide services, to purchase, read, and consume in a global and truly free manner.

The success of the Internet and the success of open source and open standards development are closely related. Open source implementations of the TCP/IP stack, web browsers, scripting languages, popular databases, core infrastructure, popular operating systems, etcetera, have all been at the foundation of the net's success and the net has been a driver for the proliferation of all these tools.

NLnet Labs was founded in 1999 by Stichting NLnet. It is a non-profit research and development organization that focuses on developments in Internet technology where bridges between theory and practical deployment need to be built; areas where development, engineering, and standardization takes place. The budget of NLnet Labs is mainly based on a subsidy from Stichting NLnet. Stichting NLnet has provided a long-term commitment in the form of a subsidy contract such that NLnet Labs can guarantee support for the software it develops.

It is our goal to play an active and relevant role in the aforementioned areas through the development of open source software, through the participation in development of open standards, and through the dissemination of knowledge. Within that context, NLnet Labs has become a recognized center of expertise in the area of DNS and DNSSEC. Our DNS software has found its way to important components of the Internet infrastructure, and we actively contribute in multiple facets of the standards development process. Dissemination of knowledge is done through education and collaboration. In 2007 we started an effort to broaden our expertise to other areas of the core Internet infrastructure by initiating a project on inter-domain routing.

The NLnet Labs offices are located in the Amsterdam Science Park (ASP).

Details of NLnet Labs Activities

Area of Interest: DNS and DNSSEC

DNSSEC Evangineering

NLnet Labs believes that deployment of DNSSEC, being a security extension to one of the protocols that is key to the operation of the Internet, is the most important area where NLnet Labs can make a significant difference. We contribute to global deployment by providing tools and software such as NSD, Unbound, LDNS, and Net::DNS. But we also contribute providing technical information, teaching courses, and popularizing the technology. The combination of solid engineering combined with spreading the word on the necessity of the technology is what we have come to call 'evangineering'.

In 2008 this work received a spur when a DNS security vulnerability hit main street news with the (so-called) Kaminsky attack. This event caused renewed interest in securing the heretofore insecure base of DNS using the DNSSEC protocol.

Unbound

Unbound is a validating caching resolver implementation with full DNSSEC support. It was written over the course of 2007. The 1.0 version was released on May 20, 2008. A coordinated set of press releases resulted in news articles and press coverage about the new software. Four more releases put the version of Unbound to 1.1.1 in November 2008, with much asked DLV and forgery resilience features. Although we have no formal usage survey, comments on the Unbound users mailing list indicate that the software is in use by ISPs and knowledgeable individuals. A number of Linux and BSD distributions have made Unbound packages available in their software repositories.

The Unbound implementation in C is based on the Unbound Java implementation developed by Verisign, Nominet, and Kirei. The modular, clean design and some parts of the state machine were reused. The C code was written with performance in mind. This means the same lean and mean attitude from NSD, but since this is a resolver, many more features are necessary.

Unbound uses the LDNS library for parsing text representation of resource records. It also uses the LDNS library for decoding DNSKEY RRs into openssl structures. This is a very limited use of the functionality that LDNS provides, however, parsing DNS Resource Record syntax is thousands of lines of code. Unbound does not use other functionality from LDNS because of performance reasons. This is a design choice, LDNS was written for general purpose tools, and thus mallocs and frees internally to support that goal, where Unbound is written for performance. LDNS is used extensively in the Unbound test code, for example for comparing decoded and encoded DNS packets.

The Unbound test suite has a unique setup called testbound, apart from unit tests and regression tests like NSD and LDNS have. Testbound has a unique feature in that it allows a simulation of network interactions to Unbound. It is implemented with linker replacements for the Unbound network callback code. In testbound, queries from users and replies from authoritative servers can be scripted and checked, without starting actual servers and clients. By starting work on Unbound with this design in mind, the interface and linking could be kept clean enough to create testbound. Testbound greatly helped to quickly test the recursion, cache, and validation state machines.

Unbound is available at the dedicated website http://unbound.net, hosted and maintained by NLnet Labs.

Unbound and the "Kaminsky attack"

NLnet Labs was informed by Kaminsky at the beginning of the year, before the release of 1.0, about the security issues he identified with the DNS protocol, and cooperated with the orderly release of the appropriate modifications to the Unbound code-base. Documentation on the spoof defenses in Unbound was provided to aid threat assessment.

It is apparent that the deployment of DNSSEC takes time, and that various interim solutions to the problems Kaminsky identified are possible. NLnet Labs has provided its own (vendor specific) defenses in Unbound, providing documentation in the form of an open specification and open source. At the end of 2008 the market shows great diversity in vendor specific Kaminsky-mitigations, where a full security analysis has not been performed on many DNS implementations. Even if properly analysed, these mitigations are but stopgap measures. Securing the data in the domain system with digital signatures, which is done with DNSSEC, remains the only fundamental solution available. Planning forwards, NLnet Labs aims to help efforts to make DNSSEC easier to deploy.
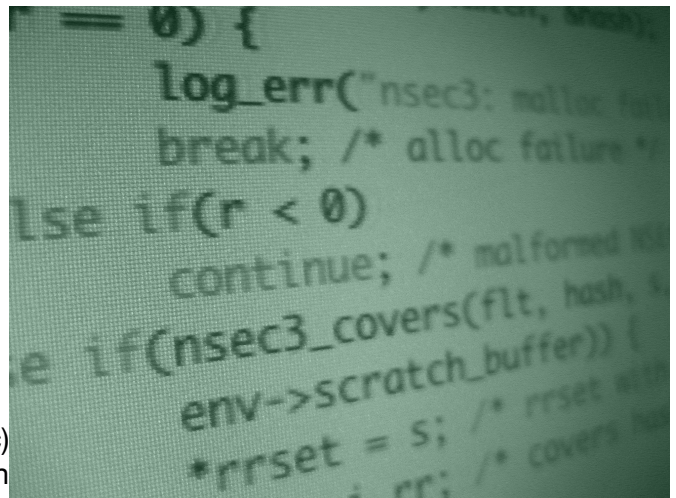
NSD

The NLnet Labs Name Server Daemon (NSD) is an authoritative RFC compliant DNS name server. It was first conceived to allow for more genetic diversity for DNS server implementations used by the root-server system and it has been developed for operations in environments where speed, reliability, stability, and security are of high importance. NSD is currently used on some root servers such as the L and K root- servers and is also in use by several top-level domain registries such as .DE, .BR, and .UK.

In 2008, NSD evolved from version 3.0.6 towards 3.2.0. Most of these patches occurred because of bug fixes. Several features were added, amongst them configuring the outgoing interface for zone transfers. This was a long outstanding feature request that finally was introduced in NSD. Furthermore, HMAC-SHA support for TSIG was implemented, as well as file rotation of the NSD log file.

NSD received some non-trivial bug reports with respect to zone transfers. Most of them saw a fix in 2008, but there are still a few open reports. They are currently under investigation. NLnet Labs commits to long term support of NSD. Not only will it announce the termination of support two years in advance, it also offers support contracts in 3 varieties.

Autotrust

As of today, DNSSEC is partially deployed. This leads to many islands of security for which validating resolvers need to manage trust anchors. Maintaining these trust points manually is a time consuming effort. NLnet Labs developed an implementation of Automated Updates of DNSSEC Trust Anchors, described in RFC 5011. The tool is called autotrust and it is intended to run from a cron job. It can run parrallel to any validating resolver (for example Unbound or BIND9).

Autotrust makes use of LDNS and Libunbound. In 2008, we have released two versions, 0.1 and 0.2. It is expected that it will see a production version in 2009.

OpenDNSSEC

OpenDNSSEC is a collaborative project, which NLnet Labs has joined in 2008. The goal is to create a product that will handle zone signing and key management, and can easily be integrated in existing DNS deployments. For more information, see the website at http://www.OpenDNSSEC.org.

LDNS

Ldns is a C library aimed to simplify DNS programming. It allows developers to easily create software conforming to current RFCs and Internet Drafts. The library originates from the Drill tool, which was written to aid in DNSSEC debugging. Since drill needs a nearly complete DNS library to do its work, it was chosen to focus on the library itself, and make drill a part of that project. It was also influenced by the Perl Net::DNS library.

Interest in and usage of ldns has been steadily increasing over the years, most likely because of increasing world-wide interest in DNSSEC and DNSSEC deployment. Ldns is now included in the software repositories of several operating systems, among which Fedora, Debian, Ubuntu, and FreeBSD.

During 2008, ldns saw 2 minor releases (1.3 and 1.4), a lot of improvements in the DNSSEC code have been implemented, and a number of dns-related tools are now distributed along with ldns. We payed particular attention to the integration with hardware signing machines through Open-SSL.

Ldns is distributed under a BSD license.
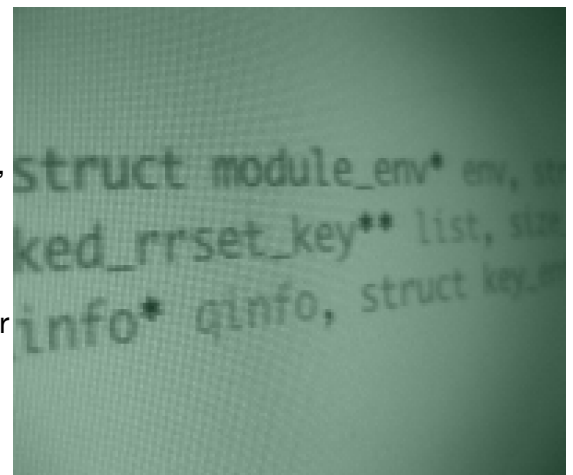
Net::DNS and Net::DNS::SEC

The maintenance responsibility for the Perl libraries Net::DNS and Net::DNS::SEC is a task that NLnet Labs started in 2005. In 2008 Net::DNS and Net::DNS::SEC saw one maintenance release. Net::DNS and Net::DNS::SEC are published through CPAN and via the www.net-dns.org website.

DNSSEC Training and documentation

In 2008 we presented various DNSSEC lectures and tutorials varying from 30 minute overview presentations to 3 day in-depth workshops. The 3 day training intends to provide participants sufficient background and practice to feel comfortable to deploy DNSSEC in their own environment. The DNSSEC Howto is an integral piece of the course material. That document is maintained at NLnet Labs. The howto can be downloaded from the NLnet Labs website at http://www.nlnetlabs.nl/dnssec_howto/

DNSSEC Key Maintenance Analysis

As a followup to the DNS Threat analysis from 2007 .SE commissioned a study to provide recommendations for the generation, storage, and use of keys in the context of DNSSEC. The study was published as

http://www.internetdagarna.se/arkiv/2008/www.internetdagarna.se/images/stories/doc/13_DNSSEC_Key_maintenance.pdf

OARC

As of January 2007, NLnet Labs is a member of OARC, the DNS Operations, Analysis, and Research Center.

DNSSEC Industry Coalition

As of November 2008, NLnet Labs is a member of the DNSSEC Industry coalition. This is a industry consortium promoting and expediting the implementation of DNSSSEC. Details about this can be found at http://dnsseccoalition.org/website/.
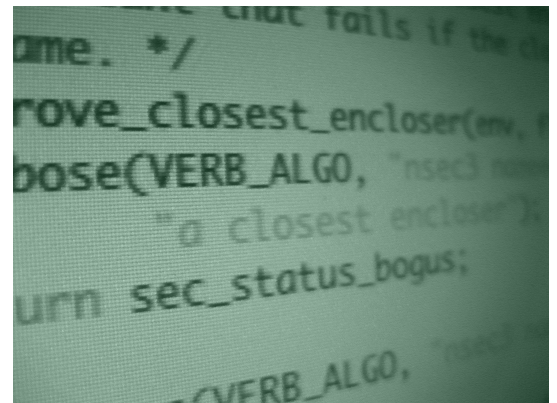
Area of Interest: Routing and Addressing

Inter-domain Routing

The inter-domain routing project continued the directions taken in 2007, namely modeling and analysis of the dynamic behavior of the BGP protocol on full-scale Internet topologies, and active involvement in the IRTF Routing Research Group (RRG).

After an exploratory phase, the BGP modeling, simulation, and analysis project started with the design and implementation of a simulation environment to study the dynamic behavior of the BGP protocol. A MSc. student from the Vrije Universiteit joined the project as part of his MSc. final project. In the half year, a simulator was developed and a series of experiments has been

conducted to validate the model and verify the implementation. For validation purposes, real-world observation data from so-called BGP beacons were obtained from the RIPE RIS monitoring system. The same real-world experiment was modeled and simulated in the BGP simulation environment, and results from the simulation have been compared with the real-world results. This validation exercise showed that the model is capable to capture the dynamics of the BGP protocol, even though the model is highly abstracted from the real-world realization.

These efforts have been reported in a MSc. thesis, see [1]. During the summer and fall of 2008, more experiments have been conducted with extended input data sets and various BGP routing policies. Results from these experiments will be published in a paper in 2009.

Presentations of partial results were given at the RIPE 56 and IETF-72 meetings. Positive feedback and interest is shown by a number of engineers and scientists active in the IETF. For the next year, new scenarios will be studied and validated with existing "real-world" data, and collaboration with other interested engineers/scientists will be initiated.

The involvement in the IRTF Routing Research Group (RRG) and related activities started slowly. In May 2008 contact and agreements with Cisco were made as part of a collaborative test and evaluation with RIPE NCC. The agreement was that Cisco provides RIPE NCC with Locator-Identifier Split Protocol (LISP) box. The LISP protocol has been proposed and discussed in the RRG. However, only at December 2008, the test system was delivered at RIPE for experiments. In November, a student from System and Network Engineering, University of Amsterdam, applied for a short internship. The internship starts in January 2009 and the subject of the project is the analysis of interoperability issues of an open source LISP implementation with the proprietary implementation of Cisco.

RRG related activities are expected to become more substantial in 2009. NLnet Labs expertise in DNS (naming services) is relevant for a number of proposals dealing with name-address seperation.

Area of Interest: IPv6

IPv6 Evangineering

NLnet Labs position is that the deployment of IPv6 is key to the preservation of an Internet that remains open for innovation, new consumers, and new market parties. Since its establishment in 1999 NLnet Labs has a strong interest in IPv6 and has delivered all of its software, and services with IPv6 supported/enabled. The work on addressing and routing has a strong relation to this area of interest.

While IPv6 has been deeply integrated in our operations, development, and thinking, we have contributed practically to IPv6 deployment by participating in tests to add IPv6 glue to the root-zone (see below) and other operational aspects.

IPv6 Root experiment

To help ICANN/IANA to determine the effects of adding IPv6 addresses to the root zones, NLnet Labs participated in an experiment to provide a server for an alternative "hints file". The full description of the experiment can be found on the ICANN site[2].

Area of Interest: Standards Development, Internet Governance and technical advisories.

NLnet Labs staff is actively involved in the Internet Standards Development through involvement in the IETF.

Kolkman was reappointed as chair of the Internet Architecture Board in March 2008. As the IAB chair he is ex-officio member of the IESG, the IAOC, and is an IETF Trustee. Furthermore, NLnet Labs staff has actively participated or tracked the work in the DNSOP, ENUM, SHIM6, IDR and GROW working groups, and the Routing Research Group both in email discussions and during meetings. NLnet Labs staff is also participating in the RIPE meetings.

During 2008, Akkerhuis contributed as a paid consultant to ICANN, for 5 days per month. As part of this role he is a member of the ISO 3166 Maintenance Agency ISO's focal point for country codes. He attended the ISO MA 3166 meeting in Geneva and the 32nd ICANN meeting in Paris.

Akkerhuis and Kolkman continued to participate in the DNSSEC deployment group that is 'hosted' by Shinkuro and funded by the US Department of Homeland Security. That group strives to coordinate global DNSSEC deployment efforts.

Both Kolkman and Akkerhuis are active in the area between technology and policy development: Both participated in the round table meetings organized by RIPE NCC. Akkerhuis en Kolkman are also listed as arbitrators for the RIPE NCC Conflict Arbitration procedure.

Akkerhuis is a member of ICANN's security and stability advisory committee SSAC[3] and the Dutch IPv6 Task Force[4].

The future

Medium term outlook

NLnet Labs will continue with a focus on DNS related activities.

Specifically we are participating in the open-dnssec project (http://opendnssec.se) that targets to become a open-source based turn-key solution for DNSSEC. It is likely that NLnet Labs will take support responsibility for the package for which the first public beta is expected mid 2009. Open-dnssec may serve as the basis of a more comprehensive DNS and DNSSEC content management system.

There is a commitment with respect to the support of NSD and Unbound; we commit to announcing end of support at least two years in advance. This allows for users of our software to have some confidence in business continuity, and thus contributes to the acceptance and dissemination of the technology.

In addition to our DNS work we try to diversify our research and development interest as mentioned above. We have made a start with the extension of our operations by entering into the Routing and Addressing area in 2007 and 2008 and plan to continue to expand in this area. More specifically, we try to bridge gaps between engineering and research through modeling and testing.

Finally, NLnet Labs is ready to play a role whenever its expertise can provide useful input in maintaining an open and innovative Internet. We will continue to do so through participating in technical fora and standard organizations. In addition NLnet Labs is ready to participate, mainly through providing technical expertise, in the collaborative governance structures that are so fundamental to the Internet's success.

Long Term Outlook

NLnet Labs strives to be a technical expertise center that promotes the core values of an open, innovative, and collaborative set of networks: *the Internet*.

To that end NLnet Labs will continue to find pragmatic approaches to bridge between theory and practical deployment in the area of Internet protocols. The specialism and expertise of the persons in our team are a large factor in identifying new areas of work. Occasionally we will allow (pilot) projects to drift outside of the current areas of interest. The main selection criterium for projects will be whether our contribution achieves results towards a public interest and relates to an open and innovative Internet environment available to all.

NLnet Labs organization and finance

Board

Stichting NLnet Labs was founded on December 28, 1999 by Stichting NLnet. Its Board consists of three to five members with staggered terms. In 2008, the board started with the following members: Frances Brazier (secretary), Wytze van der Raay (treasurer), and Leo Willems (chair and member as of January 31, 2007). After conducting a search for additional board members in 2007, two new board members were appointed in January 2008: Simon Hania (at that time Technical Director of XS4ALL Internet BV) and Ted Lindgreen (former director of Stichting

NLnet Labs Board in 2008		
name	**title**	**end of term**
Frances Brazier	secretary	December 28, 2011
Simon Hania	member	January 31, 2011
Ted Lindgreen	member	January 31, 2012
Wytze van der Raay	treasurer	December 28, 2010
Leo Willems	chair	February 1, 2010

NLnet Labs). The board's composition and most recent rotation schedule is shown in the table.

Five board meetings took place in the year 2008: January 31, April 3, June 26, October 2 and November 23. All meetings took place in Amsterdam. Olaf Kolkman participated in the board meetings in his role of Director of NLnet Labs.

Board members do not receive any compensation for their board work. If necessary, expenses may be reimbursed. This was not the case in 2008.The table to the left shows the additional functions held by board members and director of Stichting NLnet Labs.

Staff

NLnet Labs employed six people in 2008: Jelte Jansen, Jaap Akkerhuis, Olaf Kolkman

Director and Board Member Additional Functions in 2008	
name	**additional functions**
Frances Brazier	Professor Intelligent Interactive Distributed Systems at the Vrije Universiteit Amsterdam (VU) Leader of Stichting NLnet's Researchgroup, stationed at the VU Chair Stichting ThinkQuest Nederland (TQ-NL) Member of the board of Landelijk Netwerk Vrouwelijke Hoogleraren (LNVH)
Simon Hania	Technical Director XS4ALL Internet BV Senior Vice President Publishing TomTom
Ted Lindgreen	none
Wytze van der Raay	Treasurer Stichting SANE
Leo Willems	Director TUNIX Internet Security & Training. Member of the board of Stichting IT Projecten (StitPro).
Olaf Kolkman	chair Internet Architecture Board Ex-officio member of the Internet Engineering Steering Group, the IETF Administrative Oversight Committee, and an IETF Trustee Arbiter for the RIPE NCC Conflict Arbitration Procedure

(director), Wouter Wijngaards, Benno Overeinder and Matthijs Mekking. Maciej Wojciechowski joined NLnet Labs as an intern from January 8 to July 7 and held a temporary position between July 7 and September 28.

The director of Stichting NLnet Labs is responsible for the daily management of all activities of the Open Source network software development laboratory, including development of strategies and plans for new activities.

Finances

Stichting NLnet Labs primarily finances its projects and activities from grants obtained from its parent organization Stichting NLnet. The long term financial commitment of NLnet towards NLnet labs has been codified since 2007 in a subsidy contract with a five year notice period. This allows NLnet Labs to commit to long term efforts and support.

In addition, income may be obtained by providing Open Source Internet based consultancy and/or programming services to third parties.

Consultancy contracts with .SE, the Swedish top-level domain registry, SIDN, the Dutch top-level domain registry, and ICANN, the Internet Corporation for Assigned Names and Numbers, and a number of NSD support contracts were sources of additional income in 2008 in the latter category.

Fiscal Status

On 20 September 2007, NLnet Labs has been recognized as a institution with general benefit objectives, "Algemeen Nut Beogende Instelling (ANBI)". This status has become relevant under new regulations that are effective as of January 1, 2008.

Income in 2008

At the end of 2007, a budget was drawn up for the expected staffing level and activities of NLnet Labs during the year 2008, with a total of € 546.000. Based on this budget and the expected consultancy income, a grant was requested from Stichting NLnet for € 435.000 during 2008. Stichting NLnet allocated these funds for 2008, to be received by NLnet Labs on a quarterly

Income 2008			
	2007 actual	**2008 actual**	**2008 budget**
Donations General	393.250	447.500	435.000
Consultancy Income	57.000	60.500	48.000
NSD Support	56.771	43.500	60.000
Interest Income	3.295	2.264	3.000
Total	510.316	553.764	546.000

basis, € 108.750 per quarter. In the middle of 2008 it became obvious that the requested budget would not be sufficient to cover 2008's costs due to a terminated support contract and higher than expected costs to fulfill the IAB chair role. Thus an additional subsidy was requested and received from NLnet for € 25.000. At the end of the year, € 12.500 of that subsidy could be returned to NLnet though.

The net result is that Stichting NLnet Labs received a total of € 447.500 from Stichting NLnet during 2008.

The consultancy contract with ICANN from April 2005 was continued in 2008. In addition to that contract, NLnet Labs provided advisories to .SE the Swedish top level domain registry, and SIDN, the Dutch top level domain registry. Besides, NLnet Labs offers support contracts for NSD. The total income from consultancy and NSD support in 2008 came to € 104.000.

The only other significant source of income during 2008 was interest derived from a savings account used to deposit funds temporarily. This amounted to € 2.264.

Expenditure in 2008

The major expenditure categories of NLnet Labs in 2008 are staff, travel and housing.

Over 2008 NLnet Labs had a positive result of € 272.

As a result, the financial reserve at the start of 2009 is € 65.347.

2008 Expenditure			
	2007 actual	2008 actual	2008 budget
Staff	402.464	429.081	429.780
Housing	35.606	37.819	36.420
Travel	29.214	47.027	36.000
Depreciation	5.601	5.513	7.200
Other costs	36.969	34.052	36.600
Total	509.855	553.492	546.000

2009 Budget		
	2008 actual	2009 budget
Staff	429.081	449.100
Housing	37.819	40.128
Travel	47.027	51.000
Depreciation	5.513	6.000
Other costs	34.052	36.360
Total	553.492	582.588

Budget for 2009

The 2009 budget has been drawn up in October 2008. NLnet Labs expects to receive about € 48.000 from consulting activities, and € 43.500 from NSD support contracts. Thus, the projected deficit for 2009 comes down to € 488.000. A request for four quarterly grants of € 122.000, thus for a total of € 488.000 in 2009, has been submitted to Stichting NLnet, and has silently been granted.

The NLnet Labs books have been audited by Koningsbos Accountants BV from Amsterdam on May 5, 2009.

Publications, Presentations, and Report

Publications

Wojciechowski, M., "BGP Simulation", MSc. Thesis, Department of Computer Science, Vrije Universiteit Amsterdam, 2008.

van 't Noordende, G. J., Overeinder, B. J., Timmer, R. J., Brazier, F. M. T., and Tanenbaum, A. S., "Constructing Secure Mobile Agent Systems Using the Agent Operating System", in: International Journal of Intelligent Information and Database Systems, 2008.

Warnier, M., Oey, M. A., Timmer, R. J., Overeinder, B. J., and Brazier, F. M. T., "Enforcing Integrity of Agent Migration Paths by Distribution of Trust", in: International Journal of Intelligent Information and Database Systems, 2008.

J.Jansen: An introduction to the use of HSM, May 2008, http://www.nlnetlabs.nl/downloads/publications/hsm/hsm.pdf

J.Jansen: DNSSEC Key Maintenance Analysis, .SE Internet Dagarna DNSSEC and IPv6 workshop, 20 October 2008, http://www.internetdagarna.se/arkiv/2008/www.internetdagarna.se/images/stories/doc/13_DNSSEC_Key _maintenance.pdf

Olaf Kolkman: "DNSSEC enige oplossing voor DNS lek" opinion pages Computable, August 2008, http://www.computable.nl/artikel/ict_topics/security/2665021/1276896/dnssec-enige-oplossing-tegen-dnslek.html

Olaf Kolkman (Editor), IAB: "RFC Editor Model (Version 1)", http://tools.ietf.org/html/draft-iab-rfc-editor-model

Daigle L., Kolkman O,(Editors), IAB: "On RFC Streams, Headers, and Boilerplates", http://tools.ietf.org/html/draft-iab-streams-headers-boilerplatesPresentations

Olaf Kolkman: "Different Players at Different Layers" presented at the Technical Forum prior to the OECD Ministerial Conference on the Future of the Internet Economy, Seoul, Korea, http://www.nlnetlabs.nl/downloads/publications/DifferentPlayersatDifferentLayers.pdf

Olaf Kolkman: The IETF, presentation at " European ICT standardisation policy at a crossroads: A new direction for global succes" http://ec.europa.eu/enterprise/ict/policy/standards/cf2008/34ok.pdf

Wouter Wijngaards: "Unbound, a validating caching resolver" presented at RIPE 56, Berlin http://www.ripe.net/ripe/meetings/ripe-56/presentations/Wijngaards-Unbound_DNSSEC_Validating_Resolver.pdf

Wijngaards, W.C.A. Resolver side mitigations. August 25, 2008. draft-wijngaards-dnsext-resolver-side-mitigation-00 for the DNSEXT call for forgery resilience.

Wojciechowski, M., and Overeinder, B.J., "Internet-Scale BGP Simulation (Design and implementation)", RIPE 56, Berlin, Germany, May 2008.

Wojciechowski, M., Overeinder, B.J., "Internet-Scale BGP Simulation (Experiments and Analysis)", IETF-72, Dublin, Ireland, July 2008. http://www.iepg.org/2008-07-iepg72/benno.pdf

Presentations and meetings participation

30 Jan-2Feb, Akkerhuis attended the combined meeting of the ISO 3166 Maintenance Agency and the Working Group 2, Technical Committee 46.

4-5 February, Kolkman IAOC retreat, Helsinki FI.

12 February, Kolkman participated in the "European ICT standardisation policy at a crossroads: A new direction for global succes", Brussels, BE.

3-4 March, Kolkman participated in the "Address Allocation Models for the Internet Workshop", Milpitas, CA, US

9-14 March, Akkerhuis, Jansen, Kolkman and Mekking attended IETF71, Akkerhuis also attended the ISOC Advisory Committee, Philadelphia, PA, US

26 March, Akkerhuis visited the official presentation of the start of ENUM in NL , Den Haag, NL

31 March, Wijngaards participated at the DNS summit in Redmond, WA, US

2 April, Wijngaards visited Secure64 offices in Denver, CO, US

21 April, Mekking attended EIPSI event, Eindhoven, NL

24 April, Mekking and Overeinder participated in a UC Louvain Seminar on IP networking, Louvain, BE

25-26 April, Kolkman IAB Retreat, Stockholm. SE

5-9 May, Akkerhuis, Kolkman, Wijngaards, and Wojciechowski attended RIPE 56, Berlin, DE

May 15, Mekking and Wijngaards participated at the NLUUG Spring Conference in Ede.

22 May, Kolkman presented "The IETF standards process" at the European Patent Office in The Hague, NL

27 May, Akkerhuis, Start Meeting project ICT disturbance project as part of the protection of Critical Infrastrures in the Netherlands, Ministry of BZ & KR, Den Haag, NL

29 May, Akkerhuis, Pre ICANN meeting with SIDN an Ministry of EZ, Den Haag, NL

1-5 June, Kolkman gave a DNSSEC course at AfNOG and participated in the AfriNIC meeting, Rabat, MA

10-11 June, Kolkman IAOC retreat, Milpitas, CA, US

16-17 June, Kolkman participated in the Internet Technical Forum for The Future of the Internet Economy OECD Ministerial Meeting, Soel, KR

22-27 June, Akkerhuis participated in the 32nd ICANN Meeting, Parid, FR

27 July- 1 August, Akkerhuis, Mekking, Kolkman, Overeinder, and Wijngaards attended IETF72, Dublin, IE

11 August, Akkerhuis, Lunch meeting about ENISA at the Ministry of EZ, Den Haag, NL

17-19 August, Kolkman participated in a DNSSEC workshop for .IN officials, New Dehli, IN

15-19 September. Kolkman and Akkerhuis assisted in a DNS/DNSSEC course organized by ISOC, Amsterdam, NL

21-26 September, Akkerhuis assisted in a DNSSEC workshop during the RIPE Regional meeting, Moscow, RU

22-25 September, Kolkman participated in the RANS 2008 conference, Moscow, RU

29 September, Akkerhuis and Kolkman participated in the RIPE Roundtable, Schiphol, NL

20 October, Jansen participated in the .SE Internet Dagarna DNSSEC and IPv6 workshop, Stockholm, SE

25-30 October, Akkerhuis and Kolkman attended RIPE57, Dubai, AE

12-13 November, Akkerhuis paricipated in a study meeting organized by ENISA about Network resilience, Brussels, BE

16-21 November, Akkerhuis, Jansen, and Kolkman attended IETF74, Minneapolis, MN, US

1-2 December, Kolkman attended the European IP forum, Amsterdam NL

9 December, Akkerhuis, Work Conference Critical Infrastructures at the ministry of BZ & KR, Den Haag NL

11 December, Akkerhuis and Kolkman, Visit and Christmas Dinner with ICANN, Brussels, BE

12 December, Jansen and Mekking attedned the SAFE.nl workshop on identity management, Nijmegen, NL

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