



Annual Report 2009

Colophon

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We are happy to present NLnet Labs Annual report 2009. 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 each other on the Internet without any concern for the infrastructure between end-nodes. This allows people to publish, provide services, to purchase, read, and consume in a global and truly free manner. The availability of open source and open standards is one of the success factors for protocols being deployed on the Internet (RFC5218).

NLnet Labs is a research and development group that focuses on developments in Internet technology bridging the gap between theoretical insights and practical deployments; engineering and standardization, where public interest is often more pressing than commercial interest. It is our goal to contribute to the public interest by playing an active and important role in the development of open source software, participating in development of open standards, and disseminating knowledge through training, consultancy, and *evangineering*. NLnet Labs is recognized for her expertise in Internet system technology and architecture, in particular in DNS and DNSSEC. NLnet Labs' software is an important component of the Internet infrastructure. NLnet Labs plays a significant role in standards development. Dissemination of knowledge is realized through education and collaboration.

Stichting NLnet Labs was founded in 1999 by Stichting NLnet. The budget of NLnet Labs, a non-profit organization, 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.

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, 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, Net::DNS and OpenDNSSEC. 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 2009 several TLDs started deploying DNSSEC and an announcement was made that the root zone is going to be signed in 2010. The Dutch .NL registry SIDN announced that .NL will be signed shortly after the root zone is signed. NLnet Labs' persistent efforts have played a role in these developments.

The Unbound Recursive Nameserver

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. Unbound is present in many BSD port distributions and linux package 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.

In 2009 the Unbound versions 1.2.0 to 1.4.1 have been released. Some of the major new functionality has been a port to the Windows OS, where it integrates as a background service, and can be used to provide DNSSEC validation. The mingw-gcc compiler and GNU toolset are used to create windows executables. Also a python module was contributed¹. The module design inside Unbound can be utilised to create and tryout new DNS technology – one of the aims of the Unbound Java creators. Furthermore DNSSEC validation was made more robust in the face of errors, with RFC5011 (automated trust anchor updates) and RSASHA256/512 support rounding out the support to enable Unbound to work well in a signed-root environment.


Unbound is targeted for ISP and Enterprise environments. In 2009 we started the process of finding partners that can provide commercial support to overcome impediments for deployment in

Technology

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.

¹The contribution was submitted by a project funded by the CZ registry.



these environments. NLnet Labs issued an RFI to seek industry parties interested in developing Unbound support. This has led to a NLnet Labs listing a number of organizations that offer support for Unbound. NLnet Labs has dedicated support contracts, for 3rd line support, with some of these.

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

The NSD Authoritative Nameserver

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, .SE and .UK.

NSD is considered quite stable. In 2009, a few minor features that relate to zone transfers were added. Also, file rotation on the logfile was enabled and several bugs were fixed. We have released three versions of NSD, 3.2.1, 3.2.2 and 3.2.3. 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.

The Autotrust Trust-Anchor Tool

Autotrust is an implementation of Automated Updates of DNSSEC Trust Anchors, described in RFC 5011. 2009 brought two versions of autotrust, 0.3.0 and 0.3.1. The tool is called autotrust and it was intended to run from a cron job. It is improved to be able to be a daemon that also implements the specific timers as described in the RFC. Some additional configuration options made the tool more user friendly. It is included in the software repositories of Fedora and Debian.

Autotrust makes use of LDNS and Libunbound. It can run parallel to any validating resolver (for example Unbound or BIND9). In 2009, the autotrust code was also integrated into Unbound.

Port Maintenance

In 2009 we started to take a more concerted effort to maintain the FreeBSD ports of software products we develop. This allows us to get a good handle on completeness of the installation instructions. Besides it provides insight on the availability of, and dependencies on, a typical installation environment. We do not maintain ports and equivalent distribution mechanisms (such as RPM and DEB packages) for other operating systems.

The Features of OpenDNSSEC



Overview

Single piece of software for signing DNS zones that can be seamlessly integrated into an existing system without needing to overhaul the entire existing infrastructure.

Can be configured to sign zone files or to sign zones transferred in via AXFR.

Fully automatic – once set up, no manual intervention is needed.

Possibility of manual key rollover (emergency key rollover).

Open source software supplied with a **BSD** license so suppliers of commercial products can use the open source code in them whilst retaining the IPR of their own software.

Scalable

Able to sign zones containing anything from a few records up to millions of records.

Single instance of OpenDNSSEC can be configured to sign one or many zones.

Keys can be shared between zones in order to save space in the HSM.

Flexible

Able to define zone signing policy (length of key, key lifetime, signature interval etc.); can set the system up for anything between one policy to cover all zones to one policy per zone.

Works with all different versions of the Unix operating system

Secure

OpenDNSSEC stores sensitive cryptographic data in an HSM, communicating with it using the industry-standard PKCS#11 interface.

SoftHSM – a software emulation of an HSM – is available if use of an HSM is not necessary, or to set up a DNSSEC testbed before purchasing a real HSM.

Facility to check whether HSMs are compatible with OpenDNSSEC.

Includes an auditing function that compares the incoming unsigned zone with the outgoing signed zone, so you can check that no zone data has been lost and that the zone signatures are correct.

Supports RSA/SHA1 and SHA2 signatures

Denial of existence using NSEC or NSEC3

OpenDNSSEC: A DNSSEC Turnkey Solution

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.

OpenDNSSEC fits within the NLnet Labs mission as it intends to deliver a turnkey solution that will lower the barrier to DNSSEC deployment. NLnet Labs contribution to the project has mainly been in supplying the elements that carry “DNS intelligence”, the cryptographic and management components have been produced by other partners in the project.

The initial members of the OpenDNSSEC project are .SE, Kirei, John A Dickinson, Nominet, and NLnet Labs, joined by SIDN and SURFnet.

The LDNS Software Library

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 deployment. OpenDNSSEC depends heavily on Ldns. Ldns is included in the software repositories of several operating systems, among which Fedora, Debian, Ubuntu, and FreeBSD.

During 2009, Ldns saw several releases. The first, version 1.5.0, extended the API and the example suite. 1.6.0 added direct SHA1, SHA256 and SHA512 support, 1.6.1 introduced GOST (through OpenSSL) support. Versions 1.6.2 and 1.6.3 are bug fix releases, some of them of high importance for the OpenDNSSEC project.

Ldns is distributed under a BSD license.

The Perl Net::DNS and Net::DNS::SEC Libraries

The maintenance responsibility for the Perl libraries Net::DNS and Net::DNS::SEC is a task that NLnet Labs started in 2005. In 2009 Net::DNS saw two maintenance releases. Net::DNS and Net::DNS::SEC are published through CPAN and via the www.net-dns.org website.

The Root Scaling Study

Akkerhuis participated in a study on the Impact on the DNS Root System of Increasing the Size and Volatility of the Root Zone². The study was undertaken to determine if, how, and to what extent “scaling the root” will affect the management and operation of the root system.

DNSSEC Training and documentation

In 2009 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/

DNS Communities

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 DNSSEC. Details about this can be found at <http://dnsseccoalition.org/website/>.

DNSSEC.nl

The DNSSEC.nl platform, formed in 2009, is aimed at finding solutions for open issues that are blocking widespread DNSSEC deployment in the Netherlands. The platform focuses on DNSSEC deployment for the .nl ccTLD, the Dutch (ISP) market, under Dutch law and for the Dutch local Internet community as stakeholders. Of course we hope that the solutions and discussions that this platform produces can serve as a guideline for implementations in other parts of the world. Its charter can be found at <http://www.dnssec.nl/dnssec-nl-platform-charter/>

NLnet Labs is one of the organizations that supports the platform.

² <http://www.icann.org/en/committees/dns-root/root-scaling-study-report-31aug09-en.pdf>

Area of Interest: Routing and Addressing

Inter-domain Routing

The inter-domain routing project continued the directions of the past two years, 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).

In 2008, the project started with the design and implementation of a simulation environment to study the dynamic behavior of the BGP protocol. The main activities in this project were in the first two quarters of 2009. This resulted in the organization of the so-called “BGP Party” during the RIPE 58 meeting. In this workshop, a number of BGP experts presented their latest research results, and exchanged ideas, commented and made suggestions on each others projects. This workshop was considered very worthwhile, and improved our understanding in BGP operational issues. For example, an important problem we dealt with is the BPG withdrawal convergence times, which in our simulation are consistent larger than observed in real-world. As a result of the discussions, this was explained by our diverse number of prefix reachability paths. In reality, there is only a limited number of prefix reachability paths due to prefix path filtering. BGP withdrawals typically explore all possible reachability paths, and with our larger diversity, the convergence times increased.

The involvement in the IRTF Routing Research Group (RRG) continued and resulted in a pilot project on the LISP/OpenLISP interoperability, both implementations of the Locator/Identifier Separation Protocol developed within the IETF. With a MSc. student from the University of Amsterdam, we setup a test environment with OpenLISP (from the University of Louvain) on a FreeBSD server. The next step was to configure the LISP+ALT mapping system: a name service for the LISP system. The mapping system is based on the BGP protocol and in order to interoperate with other LISP+ALT systems, we obtained an AS number from the Cisco LISP project group, and configured our mapping system to connect with the RIPE LISP site. The project resulted in a report published on our website³. Plans to continue the project for 2010 exists, and possible collaboration with the developers of OpenLISP has been discussed, in particular on the mapping system. The amount of time and effort in continuation will depend on availability of a new version of OpenLISP (necessary for interoperation with Cisco LISP) and availability of human resources.

In November, NLnet Labs and GNKS Consult have successfully submitted a project proposal to ENISA on stocktaking of current routing security deployment. The results will be used as a basis for further work on routing security and its deployment. NLnet Labs and GNKS Consult motivation to perform this study is to gain an understanding of the current use of routing security technologies by IP service providers, their state-of-the-art deployment and impact on network resilience. The project will run from January to July 2010.

Area of Interest: IPv6

IPv6 Evangingering

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.

³ <http://www.nlnetlabs.nl/downloads/publications/openlisp-msc-report.pdf>

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 site⁴.

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 2009. 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 2009, 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. The contract was temporarily extended to allow Akkerhuis' participation on the earlier mentioned study on the Impact on the DNS Root System of Increasing the Size and Volatility of the Root Zone.

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 SSAC⁵ and the Dutch IPv6 Task Force⁶.

Kolkman was a member of the Steering Committee of the GTISC/ICANN Global DNS Risk Symposium⁷, Georgia, AT, US.

The future

DNS

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

4 <http://www.icann.org/committees/security/sac018.pdf>

5 <http://www.icann.org/committees/security/>

6 <http://www.ipv6-taskforce.nl>

7 <http://www.gtisc.gatech.edu/icann09>

DNS is one of the technologies on which virtually all applications on the Internet depend for their availability and security. NLnet Labs develops software, tools, and expertise to improve the overall stability, security and resiliency of the DNS.

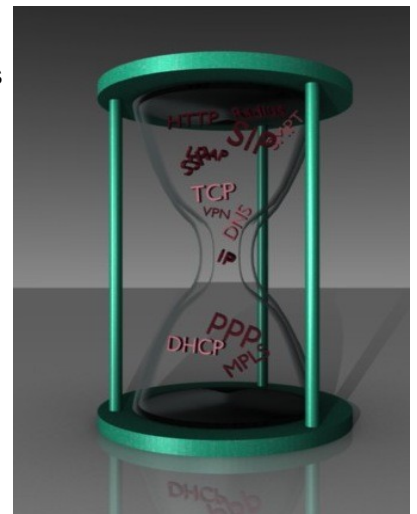
Our vision is to create a suite of software tools with comprehensive DNS management and control tools. Within that context we are currently focusing on OpenDNSSEC.

We continue to commit to provide NSD and Unbound, with a commitment to announce termination of such support at least 2 years in advance providing users of our software business continuity, and thus contributing to the acceptance and dissemination of the technology. We are also (in a yet to be determined shape and form) committed to support of OpenDNSSEC.

And more

NLnet Labs' expertise on Internet System technology and architecture, focuses on the technologies in the in the 'waist of the hourglass': DNS, IP, and Routing (see illustration). Technologies which benefit the users of the Internet at large, that provide security, stability, scalability, and reliance, and technologies that are crucial for further growth and maintaining openness of the Internet.

The IP protocol suite, in particular the openness of its addressing and routing technology, is key to the successful evolution of the Internet. There are, however, several challenges in the near future to allow the network to scale for the next billions of users and their devices to be connected. Because scaling issues are a threat to the open nature of the Internet NLnet Labs looks at scaling issues in the architecture. Both by investigating the necessity to create solutions and in investigating practical and deployable approaches to architectures that can solve mobility, scaling, and multihoming issues. As an independent expertise center on Internet architecture and technology with considerable experience in Internet Governance issues, NLnet Labs has acquired recognition in the field with a proven track record, and the corresponding responsibilities such as the involvement in several workshops about Internet Government issues, organized by the ministry of Economic affairs, Kolkman's role as IAB chair, and Akkerhuis' involvement in ICANN.



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 of Internet protocols. The specialism and expertise of the team determine which avenues are pursued. Exploration of new emerging areas relevant to the future of the Internet that fuel potential collaborations with other parties, are inherent to the role NLnet Labs plays in the field. One of the main selection criteria for projects is whether our contribution makes a difference, whether our participation serves public interest and relates to an open and innovative Internet environment available to all.

NLnet Labs organization and finance

NLnet Labs Board in 2009		
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

Board

Stichting NLnet Labs was founded on December 28, 1999 by Stichting NLnet. Its Board consists of three to five members with staggered terms. There were no board changes in 2009. The board's composition and most recent rotation schedule is shown in the table.

Five board meetings took place in the year 2009: 29 January, 21 April, 2 June, 15 September, and 3 November. 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 2009. 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 2009: Jelte Jansen (till August 21), Jaap Akkerhuis, Olaf Kolkman (director), Wouter Wijngaards, Benno Overeinder, Matthijs Mekking, and Yuri Schaeffer (as of September 14). Attila de Groot enjoyed a 4 week internship as part of the UvA master course on System and Network Engineering.

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.

Director and Board Member Additional Functions in 2009	
name	additional functions
Frances Brazier	Professor Intelligent Interactive Distributed Systems at the Vrije Universiteit Amsterdam (VU), until August 31. Professor Engineering Systems Foundations at the Technische Universiteit Delft (TU Delft), from September 1. 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	Senior Vice President Publishing TomTom
Ted Lindgreen	none
Wytze van der Raay	Treasurer Stichting SANE Team leader CAcert critical system administrators
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

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.

A second means of income are subsidies and donations by other parties. NLnet Labs has developed a sponsor agreement. For 2009 we would like to acknowledge Secure64 for their generous support.

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

A consultancy contract with ICANN, the Internet Corporation for Assigned Names and Numbers, temporarily expanded to include the 'Root Scaling Study', and a number of NSD support contracts were sources of additional income in 2009 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 2009

At the end of 2008, a budget was drawn up for the expected staffing level and activities of NLnet Labs during the year 2009, with a total of € 582,588. Based on this budget and the expected consultancy income, a grant was requested from Stichting NLnet for € 488,000 during 2009. Stichting NLnet allocated these funds for 2009, to be received by NLnet Labs on a quarterly basis, € 122,000 per quarter. By the end of 2009 it became obvious that the requested budget would be more than needed to cover 2009's costs this was mainly due to an unbudgeted consultancy contract of € 50.000. At the end of the year, € 98,000 subsidy could thus be returned to NLnet.

The net result is that Stichting NLnet Labs received a total of € 390,000 from Stichting NLnet during 2009.

The consultancy contract with ICANN from April 2005 was continued in 2009. The contract was temporarily extended for work on the "Scaling the Root Support" study. Besides, NLnet Labs offers support

contracts for NSD. The total income from consultancy and NSD support in 2009 came to € 141.750.

The only other significant source of income during 2009 was interest derived from a savings account used to deposit funds temporarily. This amounted to € 3,900.

Expenditure in 2009

The major expenditure categories of NLnet Labs in 2009 are staff, travel and housing.

Over 2009 NLnet Labs had a positive result of € 875.

Acknowledgements

In 2009 the NLnet Labs foundation received subsidy and donations from



SECURE 64

See <http://www.nlnetlabs.nl/labs/contributors/> for more information

Income 2009

	2008 actual	2009 actual	2009 budget
NLnet Subsidy	447,500	390,000	488,000
Other Donations	0	10,000	0
Consultancy Income	60,500	98,000	48,000
NSD Support	43,500	43,750	43,500
Interest Income	2,264	3,900	2,400
Total	553,764	545,650	581,900

2009 Expenditure

	2008 actual	2009 actual	2010 budget
Staff	429,081	432,214	449,100
Housing	37,819	39,001	40,128
Travel	47,027	34,026	42,000
Depreciation	5,513	3,459	6,000
Other costs	34,052	36,085	45,360
Total	553,492	544,785	582,588

As a result, the financial reserve at the start of 2010 is € 66,223.

The NLnet Labs books have been audited by Koningsbos Accountants BV from Amsterdam on May 21, 2010.

Budget for 2010

The 2010 budget has been drawn up in October 2009. The main increase in expenditure is caused by the intention to acquire 1 additional software Engineer in the cause of 2010. This software engineer will allow us to cope with the increased support pressure caused by the popularity of our products. NLnet Labs expects to receive about € 48.000 from consulting activities, € 15,000 through donations, and € 44.500 from NSD support contracts. To cover the projected deficit for 2010 a request for four quarterly grants of € 125.500, thus for a total of € 502.000 in 2010, has been submitted to Stichting NLnet, and has been granted on 25 February 2010.

2010 Budget		
	2009 actual	2010 budget
Staff	432,214	474,000
Housing	39,001	39,900
Travel	34,026	42,000
Depreciation	3,459	6,000
Other costs	36,076	49,680
Total	544,766	611,580

Publications, Presentations, and Report

Publications

- Jaap Akkerhuis, Lyman Chapin, Patrik Fältström, Glenn Kowack, Lars-Johan Liman, Bill Manning, “Scaling the Root, Report on the Impact on the DNS Root System of Increasing the Size and Volatility of the Root Zone”, 31 August 2009, <http://www.icann.org/en/committees/dns-root/root-scaling-study-report-31aug09-en.pdf>
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- Wijngaards, W.C.A., and Kolkman, O.M., “Resolver Analysis for a Signed Root”. NLnet Labs document 2009-002 version 06. June, 2009.
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Presentations and meetings participation

- 27-29 January, Akkerhuis and Kolkman, ENISA DNSSEC Workshop, Athens GR
- 3-4 February, Akkerhuis and Kolkman participated at an OARC meeting and GTISC/ICANN Global DNS Risk Symposium in Georgia, AT, US. Kolkman was a member of the symposium's Steering Group.
- 16 February, Akkerhuis participated in the RIPE-NCC Roundtable meeting, Schiphol NL
- 17 February, Akkerhuis participated in the LEA meeting at RIPE, Amsterdam NL
- 16-17 February, Wijngaards presented at the NetNod Meeting in Stockholm, SE.
- 19 February, Kolkman participated in a workshop on Internet Governance organized by the Department of Economic Affairs, The Hague, NL
- 25 February, Akkerhuis attended the Pre-ICANN Meeting (Mexico) with SIDN, EZ and other stakeholders, Utrecht NL
- 12 March, Jansen presented "DNSSEC software at NLnet Labs" at "The Keys to Deploying DNSSEC", a featured presentation at GovSec, Washington DC, US.
- 1-4 March, B.J. Overeinder, Dagstuhl Workshop Naming and Addressing in a Future Internet. Presentation on requirements for naming services in future Internet.
- 21-27 March, Akkerhuis, Kolkman, Mekking, and Overeinder attended IETF74, Akkerhuis also attended the ISOC Advisory Committee, San Francisco, CA, US.
- 30-31 March, Akkerhuis visited the Solar Center Stanford University, Palo Alto US
- 19-21 April, Akkerhuis attended the THIRD INTERNATIONAL FORUM "Partnership of State Authorities, Civil Society and the Business Community in Ensuring Information Security and Combating Terrorism" organised by the Lomosov University Moscow in Garmisch-Partenkirchen, DE
- 3 May, Jansen attended the 20th CENTR Technical Workshop, Amsterdam, NL.
- 6 May, B.J. Overeinder, BGP party, Amsterdam.
- 5-9 May, Akkerhuis, Jansen, Mekking, Kolkman, Overeinder, and Wijngaards attended RIPE58, Amsterdam, NL.
- 8-9 May, Jansen, Mekking and Wijngaards attended the OARC (side-by-side with RIPE58). Wijngaards was member of expert panel on trust anchor repositories. Amsterdam, NL.
- 8-11 June, Akkerhuis attended and participated in a panel at the Messaging Anti-Abuse Working Group Meeting, Amsterdam NL
- 11-12 June, Kolkman presented "Resolver Analysis for a Signed Root" at the symposium on Deploying a Signed Root: Issues and Proposed Solutions, Washington D.C., US.
- 17 June, Akkerhuis attended the European Public-Private Partnership for Resilience (EP3R) meeting Brussels BE
- 8 July, Wijngaards attended the dns2db workshop (side-by-side IETF75), Stockholm, SE.
- 26-31 July, Jansen, Kolkman, Mekking and Wijngaards attended IETF75. Wijngaards presented the trust-history draft to the DNSOP working group. It was accepted as work item. Stockholm, SE.
- 17-18 September, Akkerhuis and Kolkman attended the RIPE Regional Meeting, Moscow, RU where Kolkman presented and an "IETF Update"
- 28-September-1 October, Akkerhuis attended the SSAC retreat in Arlington, VA, US
- 4-10 October, Akkerhuis and Kolkman attended RIPE 59 in Lisbon, PT
- 6-14 October, Akkerhuis & Kolkman attended IETF 76, Akkerhuis, Akkerhuis presented the Root Scaling Report in the IEPG, Hiroshima, JP
- 26 October, Akkerhuis attended the Ipv6 Awards presentation, The Hague, NL
- 18 November, Kolkman attended a EC workshop on Standardization Education in Brussels, BE.

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