Report of the second edition of Benin DNS Forum Cotonou 2016

> www.dnsforum.bj www.womandns.academy

comme





,8º

11

T

0

constant

With the support of



REPORT OF THE SECOND EDITION BENIN DNS FORUM

💮 Warning

The authors are responsible for the choice and the presentation of the facts contained in this report and for the opinions expressed therein, which are not necessarily those of Benin DNS Forum and do not commit the Organization Team. Nor do they necessarily reflect the views of the other conference sponsors, La Francophonie or Woman DNS Academy.

The various comments, analysis and the presentation of material throughout this publication do not imply the expression of any opinion whatever by BDF concerning the legal status of any institution, association or of its missions.

(cc) License

The entire 2016 report of the Benin DNS Forum is available under a Creative Commons CC BY-NC-SA license.

To know your rights and obligations, visit the following website:

https://creativecommons.org/lice nses/by-nc-sa/4.0.

This license does not apply to images and excerpts from texts cited which remain the property of their respective authors under the broadcast license they have chosen. For any reuse under different conditions, please refer to the license they have chosen or contact the authors. The Benin DNS Forum thanks the support organizations (NGO IGB@NET, The Benin Chapter of the Internet Society, The Internet Governance Forum and the FemTICDev Association) who have actively contributed to the drafting of this report. Thanks also to the participants for their support and contribution to the evaluation of the 2016 edition.

Acknowledgment

Thanks to our partners: O.i.F, AFILIAS, ICANN, ABETIC, ISOCEL-Télécom, Benin Royal Hotel, TRIOOTI, France DNS, Grand Hosters, Star Soft Informatique, PHP Africa.

Special thanks to Mikaïla ISSA, Yazid AKANHO, Ramanou BIAOU and Sena Boko who have actively contributed to the production of this report.

The 2016 Organisation Committee

- Harold ADJAHO (Volunteer)
- Ramanou BIAOU (ISOC Benin/IGB@NET)
- Pierre DOVONOU (ISOC Benin)
- Karine GBAGUIDI KEREKOU (FGI Benin)
- Mathias HOUNGBO (IGB@NET)
- Mikaïla ISSA (Volunteer)
- Marlise MONTCHO (FemTICDev)

SUMMARY

Warning, License, Acknowledgment	4
Organisation Committee of 2016	5
Foreword	7
Benin DNS Forum 2016	
What is it about?	
Some Statistics	
Participation to Benin DNS Forum	10
Speakers and Support Organizations	11
Theme and items of the 2016 edition	12
Support Organizations of the 2016 edition	13
Woman DNS Academy (WDA) Programme	
Presentation of the programme	16
Profile of Participants	
Content of the Training	
Panel of Trainers	
Evaluation of the programme by participants	19
Opinions of participants	21
Perspectives of WDA's programme for 2017	22
Public Communication Forum and takening	
Public Communication Forum and tutorial	00
Profile of participants of the Public Forum	23
Panel of speakers of the 2016 edition	24
Working groups B6 and BDSEC	
Content of presentations and communications	
Panel Economy, Governance of the DNS	
Panel Security and Measures around the DNS	
Panel Practices around the DNS	
The Tutorial	
Appreciation of the public Forum by participants	
Recommandations of participants	
DNS QUIZ SHOW	37
Online Communication	
Remote Participation and communication on social media	39
Global Perspectives for 2017	40
Partners and sponsors	41
Conclusion	42

Foreword

DNS is now at the core of the worldwide Internet through Internet addresses and domain names. Since the advent of Internet governance, the communities of countries have been active in setting up frameworks for the exchange and sharing of experiences on issues related to the economic, political and open technologies aspects of the Internet.

When it comes to addressing technical issues, the DNS and IP protocols (Internet Protocol) are now the focus of this issue with regard to their organizational aspects, governance and security.

Benin is one of the first African countries to have experienced the Internet. The country is considered as a crossroad of digital and contributes to the development of Internet in different business sectors. In the recent years the Internet in Benin has grown exponentially with the corollary of an increasingly important appropriation by the population. This momentum manifests daily its impact in the habits of the population and especially in professional environment. Such potentiality announced growth but also boosted several companies and thus expanded the Beninese technical community around the Internet.

Given the primary role played by DNS and IP in the overall operation of the Internet, it has been very useful to mobilize the technical community of the Internet in Benin on issues affecting the critical resources of the Internet. This will primarily help to create a framework for consultation and exchange on the development of the Internet sector and particularly the DNS in Benin and, secondly, to share good practices contributing towards the resilience of the Internet in Benin.

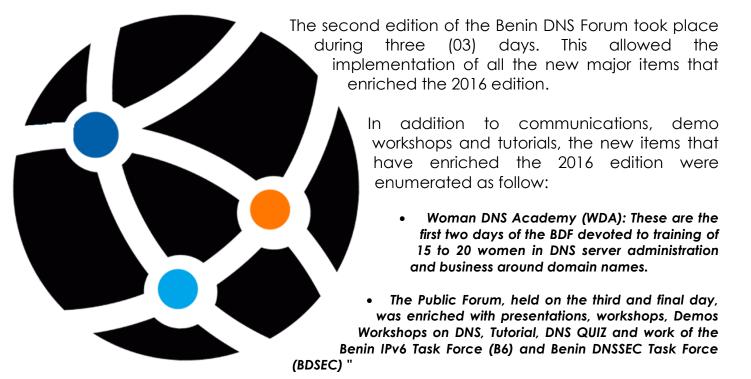
It is in this context that the "Benin DNS Forum" is initiated to better mobilize the different stakeholders of the "DNS Benin" while developing new skills within the internet community.

Benin DNS Forum 2016 What is it?

Established since 2015 by non-profit organizations, the Benin DNS Forum aims to be the major meeting of Internet and DNS in Benin.

This annual event is organized in the format of a public seminar with open training sessions on the critical technologies and resources of the Internet in Benin. The items of this forum are mainly focused on business around the DNS, domain names, DNS, DNSSEC and DANE, Internet security in Benin and IP resources operated or involved under construction as well as the exploitation of the Internet in Benin.

After the success of the first edition in 2015 with the technical community and Internet players in Benin and within the sub regions, this forum opened to the technical community of the Internet and the actors of the Benin DNS was enriched with new items for its 2016 edition. These items were aligned to local and regional needs on the Internet and particularly the DNS.



• The third major item was part of our desire to enrich the geographical diversity of the participants. It involved the participation fellowships to young people from other departments/regions of Benin interested in the DNS in order to participate actively in the activities of the BDF.

Thus, around the same table and online, the different actors exchanged and shared their experiences on the implementation, exploitation and development of their various IP and DNS infrastructures in order to meet the services offered to their customers.



Benin DNS Forum 2016 Some Statistics

Benin DNS Forum 2016	
11 Speakers	+ 230 Participants
18 Woman DNS Academy	5 Fellows of DNS Forum

Good prospects for the DNS FORUM

Benin DNS Forum 2016

- Woman DNS Academy
- 13 14 October 2016, Training room of ABETIC
 - Public Forum

15 October 2016, Conference Room of Bénin Royal Hôtel The first edition of the Benin DNS Forum took place in 2015. This pilot edition was made possible to appreciate the place of such an initiative in the ecosystem of technological events and the Internet in Benin. This was important to get feedback from the community in order to improve the upcoming editions, in terms of the format, themes and content.

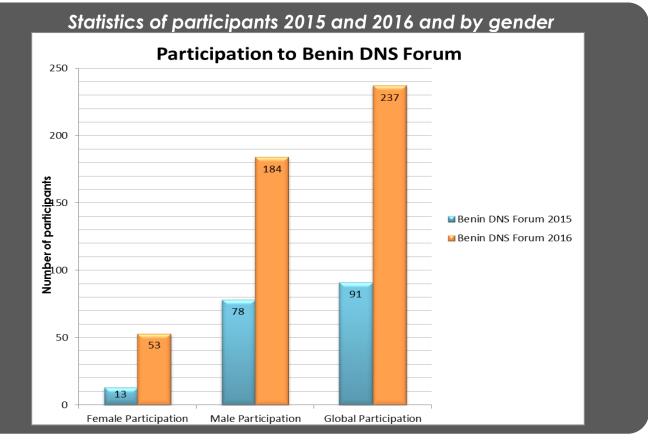
Taking into account the comments and opinions of the community has greatly contributed to the success of the 2016 edition that best meets the expectations of the community and which involves a large part of the actors of the Internet.

The graphs below show some remarkable achievements in the 2016 edition.

Benin DNS Forum

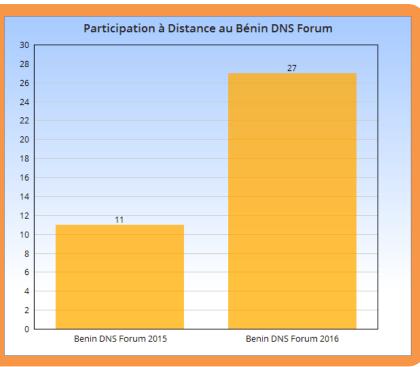
Participation to Benin DNS Forum

The number of participants increased by more than 125% in 2016 compared to the 2015 edition. It should also be noted that the increase in female participation to more than 300% in 2016 compared to the 2015 edition.



Remote participation in the Benin DNS Forum

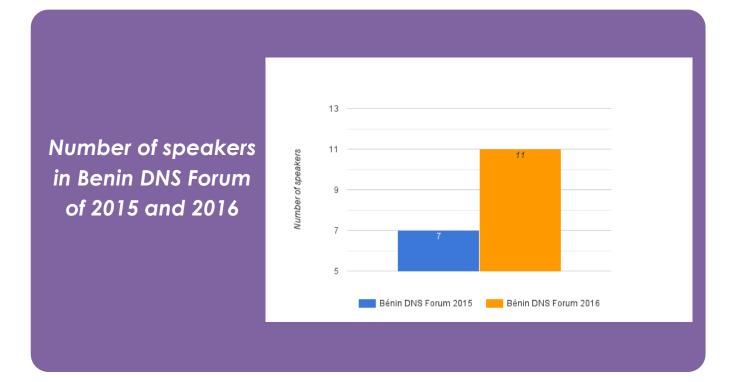
The implementation of the web 2.0 tools enabled the increase of remote participation in the Benin DNS Forum.



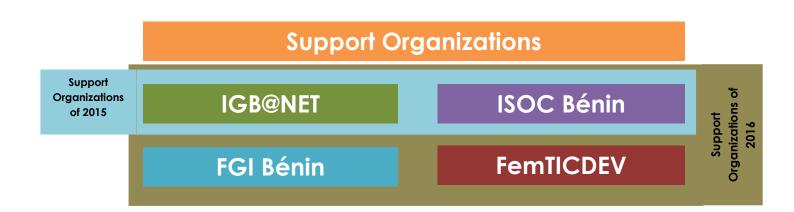
Benin DNS Forum

Speakers and support Organizations

 In view of the issues addressed, the number of speakers registered for the 2016 edition has also increased.



 The number of support associations increased from 2 to 4 for the 2016 edition. This demonstrates once again the commitment and interest of the community and local organizations to issues that affect the Internet's critical resources.



For this second edition, the Benin DNS Forum was placed under the theme "Economy, Governance and Security around the DNS".

The choice of this theme allowed us to highlight the major issues affecting the DNS in the domains of governance, economy and management of critical resources of the Internet.

In the context of an effective transfer of the function of the IANA by the US government to the multi-stakeholder world community, it is very appropriate in such a forum to initiate discussions and exchanges on the outcome of that process. The new gTLDs that were launched a few years

"Economy, Governance and Security around the DNS" ago also raised a deep need to understand the stakes of an active and attractive economy around the DNS.

Security, a guarantee of sustainability and stability of the DNS could not be ignored among the topics discussed at this forum especially in the context where the DNS Security (DNSEC)

signing keys (KSK) are being deployed.

The major thematic axes for the DNS Forum 2016 are namely:

• Security, Infrastructure and technologies around the DNS

• Economic development and market challenges of the DNS

• Governance, Digital Identity and Internationalization of Domain Names.

The **Benin DNS Forum** is an open event hosted by non-profit support organizations. No organization of private or profit interest is associated with the organization.

The first edition was organized by (02) support associations notably: IGB@NET and the Benin chapter of the Internet Society (ISOC).

For the 2016 edition, the follow-up committee of the Benin DNS Forum has launched a call for applications for the selection of two (02) other organizations to join the existing support organizations of Benin DNS Forum 2016. Each support organization involved one (01) or two (02) representatives on the organizing committee to implement the items and activities of the current year's edition.

diversity The of the organizations involved in the Internet, its governance and its technologies in the Benin DNS Forum is an important asset for the success of this initiative. This was possible thanks to the wide range of ideas that contribute to the development of the Internet in general and the DNS in particular.



IGB@NET NGO

Created from the experience acquired within the Cotonou-Wireless association, IGB@Net works for the promotion and availability of Internet in homes in Benin. It also supports and encourages the promotion of the free resources of mobile, internet and open standards.

IGB@NET also contributes to the promotion of a sustainable partnership that can encourages the development or the use of free software and resources between the various voluntary or commercial actors involved in software and free resources and open standards.

Through its activities, IGB@Net organizes and coordinates working groups on topics related to free and standard resources of the Internet.



Internet Society Benin Chapter

ISOC Benin's contributions for the promotion and development of the Internet in Benin are remarkable since its establishment on 06-13 March 1999. Its aim is to promote the use of the Internet in Benin by implementing core values, providing a first level of information and promoting interaction among its members.

ISOC Benin encourages active participation of its members of ISOC's global work. This participation is expressed through the commitment of the members to all types of cooperative projects, at local or international level as well as private or public nature.

ISOC Benin participates and contributes to all meetings and conferences, working groups and commissions, formal or informal, as well as any work and publication, whether or not using electronic means, in particular the Internet, in conformity with its corporate purpose.

Concerning capacity and competence building, Isoc Benin regularly organizes training sessions for Internet players and also takes an active part in the FGI Benin and DNS Forum activities.



FGI Bénin

The Forum on Internet Governance in Benin is a multi-actor framework for the Internet Governance in Benin.

The organization of forums on the internet governance in the different countries is inspired by the mission assigned to the United Nations to organize annually a Forum on Internet Governance which aims to be a global multi-stakeholder dialogue platform on the current and future challenges of Internet governance.

Since 2011, Benin has been represented at the forum on Internet governance at the level of the WAIGF (Forum on Internet Governance in West Africa), the AfIGF (Forum on Governance of the Internet in Africa) and the IGF (Forum on Internet Governance in the World). Building on this international experience on Internet governance, it was possible to organize the first national internet governance forum (FGIB) in 2012. The IGF Benin has given the requirement to involve all stakeholders in the ecosystem of the Internet in Benin, in a national dialogue on current dissatisfaction findings, Internet access solutions providers and the regulatory avenues of the Internet and its related services, including ".bj" management, ecommerce, online content, personal data, digital with 3G and 4G, social networks, Etc.



FemTICDev

FemTICDev (Women & ICT for Development) is a non-profit organization whose main vision is the empowerment of women through ICT, a guarantee of sustainable development. Its mission is to increase interest and strengthen the active participation of women in the ICT sector by changing attitudes and eliminating negative stereotypes of girls and women in ICT domain.

FemTICDev contributes to the development and promotion of digital culture for the benefit of the female community. It works to increase the use of the Internet among girls by initiating and motivating girls to become real digital actors, by organizing tweets-up discussions around themes and training in technology and gender issues.

Become a support organization of the 2017 edition of Benin DNS Forum Send your expression of interest to: contact@dnsforum.bj www.dnsforum.bj

Program Woman DNS Academy (WDA)



Presentation of the Programme

Woman DNS Academy (WDA) is the training program of the Benin DNS Forum primarily intended for women and dedicated to initiation to DNS systems and their administrations. This program also addresses the major challenges of the DNS economy and the economic models around domain names.

The training is essentially practical and aims to provide not only a thorough knowledge of DNS technologies, protocols around the DNS and the Internet, but also to create a real enthusiasm within the feminine gender to address issues related to DNS And its infrastructure.

For this pilot phase, the program took place over two (02) days. The selection of candidates followed an open call for applications. Candidates who meet the minimum selection criteria are invited to participate in the program.

Selected candidates not residing in the town of Cotonou (Benin) where the training takes place have received full support (Catering - Accommodation - Transport). This possibility of scholarship makes it possible to diversify the geographical origin of the candidates.

Profile of Participants

For the first edition of Woman DNS Academy, the trainees of the program came from Benin and Togo. Between the ages of 18 and 30, they are familiar with computer science and the Internet, and demonstrate a strong knowledge of the use of computer tools as well as Unix / Linux systems.

Eighteen (18) young women were selected as part of this program and followed two (02) training days on 13 and 14 October 2016 in Cotonou, Benin.

It is important to note that following the launch of the call for candidates for the selection of participants, we received a total of twenty-eight (28) applications.

Among the twenty-eight candidates, some came from the Francophone countries of the sub-region (Togo, Niger, Senegal, Chad, and Cameroon). The program initially targeted women in ICTs in Benin and those who don't have an organizational budget that allows them to support their participation. We have unfortunately not been able to accept all the applications.

Benin DNS Forum appreciates the enthusiasm of young women in ICT for issues affecting the DNS. This opens up avenues for reflection to extend the program from next year (depending on the organizational budget) to other francophone countries within the sub-region.

In addition, under a sub-regional integration framework, we have selected an application from Togo to test this possibility for the years to come.

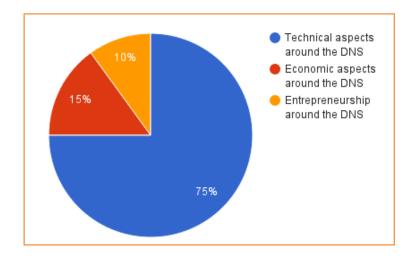


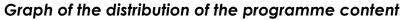
Woman DNS Academy Programme

Content of the Training

Woman DNS Academy has a diverse content. Although much of the training is focused on the technical aspects of the DNS, the program also addresses the economic aspects and entrepreneurship around the DNS.

Two (02) aspects have be discussed, notably the technical and economic aspects of the DNS.





Content of DNS technical aspects

- Installing a Debian Operating System
- Presentation of the DNS and the Internet
- Installation of a Primary DNS Server with BIND
- Getting Started and Configuring BIND Files
- Presentation of a file Zone
- Installing a secondary DNS server (primary clone)
- Principles of replication
- Zone Transfer
- Security around the DNS
- Secure zone file transfer (with TSIG signature)
- Basics of DNSSEC
- Getting started with the DIG command

Content of the economic aspects around the DNS

- Domain name market
- Register and registrar, what difference?
- Registrar Accreditation by ICANN

www.womandns.academy

Panel of Trainers

For the Woman DNS Academy program, a panel of trainers was formed. This panel is consists of national and international experts in the domain of the Internet and the DNS, whose experiences have been remarkable in proposing content in line with the local context and to train the various trainees.

Hervé HOUNZANDJI, University of Lorraine

Expert in Operating System and Administrator of the databases Oracle at the CHRU of Nancy. Lecturer at the University of Lorraine, Digital Consultant.

Mathias HOUNGBO, IGB@NET

System Developer, Network and Security Administrator. Defender of free and open-source software, the Internet, mobile, open standards and semantic web. Teacher at ESGIS Benin.

Yaovi ATOHOUN, ICANN

Electrical engineer with more than twenty years of experience in information and communication technologies (ICT). He is responsible for the organization of activities and

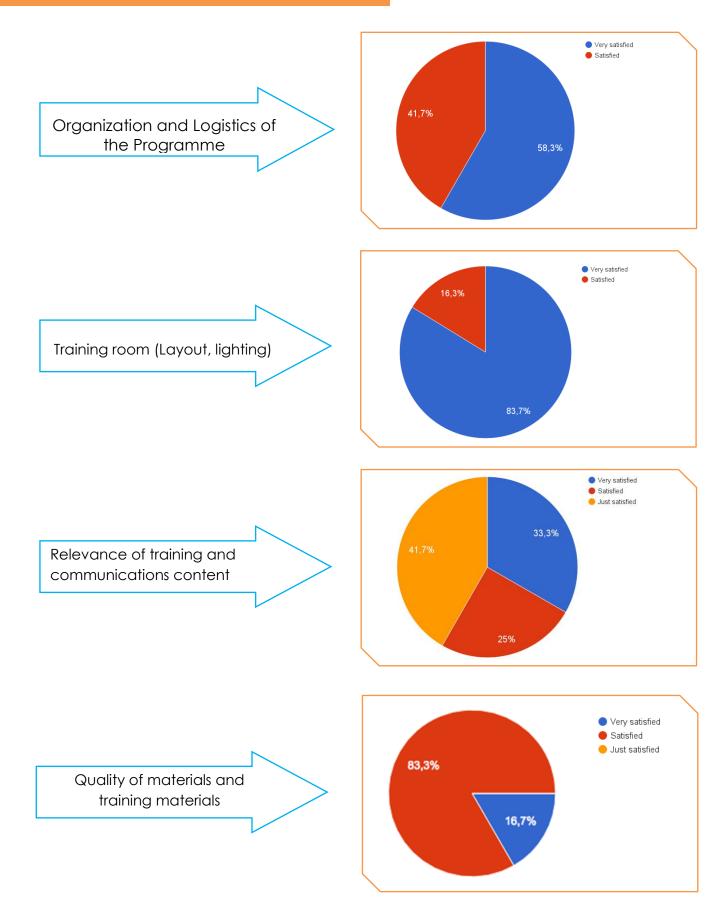
operations for ICANN's engagement in Africa.

Evaluation of the programme by participants

At the end of the training the trainees filled in an anonymous evaluation form enabling them to give their opinion on the organization of the training and its content.

This evaluation also identifies leads, opportunities and improvements for next year's program.

Woman DNS Academy Programme



Woman DNS Academy Programme

Opinion of participants

Participants in their evaluation of the training noticed some strong points:

- The practicability of the training;
- The listening, availability and quality of trainers for better follow-up;
- The ease of assimilation of certain concepts with the personalized follow-up made by the trainer;
- The use of Open Source applications in training;
- Presentation on the economic and market aspects of the DNS;
- Discovery of the ICANN Organization.

Some points of dissatisfaction were also noticed by the participants:

- The insufficient number of days to better understand the different subjects covered;
- Some practical work related to DNS security could not be completed by participants;
- The quality of the projection needs to be improved.

Some of the participants' suggestions for improvement are as follow:

- Increase the duration of the training so that it takes place over at least four (04) to five (05) days in order to deepen the various aspects of DNS security;
- Evaluation of the participants by a MCQ;
- Setting up a Woman DNS community in Benin.



Madam Minister of the Digital Economy and Communication of Benin, **Rafiatou MONROU** came to encourage the trainees of the Woman DNS Academy

Perspectives of WDA's programme for 2017

Due to the important role that women can play in ICT and the resilience of the Internet, the Benin DNS Forum reiterates its intention to continue the Woman DNS Academy programme.

In the light of the findings and proposals for improvement that have been recorded, the following axes of development will be implemented with the support of our partners for a more ambitious and quality training programme, which provides an enriching and unique experience for the trainees.

These axes are:

- Extend the WDA program over 4 to 5 days of training
- Welcome the participation of young women in ICTs in Francophone African countries
- Taking into account the entrepreneurial component around the DNS
- Introduce an evaluation (MCQ) of the participants

Acknowledgment

Thanks to the International Organisation of Francophonie (O.i.F) and l'Agence Béninoise des Technologies de l'Informations et de la communication de (ABETIC) for their support to the WDA.

We thank all the women who actively participated in this program: YAVOEDJI N. Antoinette - OCHOFFA Bénédicta - EBO-HOUINOU Nondjignon Augustine Hermine - ZEHE Hirmine Estimée - VISSOH Héléna Sandra Sessi - IMOROU ABOUDOU KADIATOU - IDJATON Koubouratou Olowountogni - CODJIA Anel Mauricette - ATINDOGBE Morelle Ghislaine - N'KOUEI B. Evelyne - ALOKPO Manuela Rebecca Bodounrin - TOUNGOU SAMIRATOU - DJOKONON Mèdéssi Sylvia Aurore - Amoussou Malorie - Floride Doumanou - Marlise Montcho - HONFOGA Anne-Carole

A special thank you to the Minister of the Digital Economy and Communication of Benin, Madam Rafiatou MONROU for her visit to encourage the trainees.

Public Forum of communications and tutorial

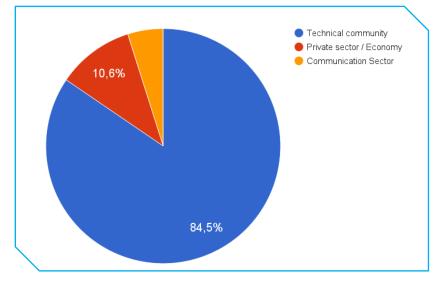


Profile of participants to the Public Forum

The public forum of communications / presentations and tutorial took place over a whole day (from 09h to 18h). The 2016 edition was well attended with a significant participation rate of the Beninese and regional Internet community (through distance participation).

The profile of participants in the Benin DNS Forum is very diverse. Participations from the technical community were the largest (78.8%).

The economic community (private sector) has also been interested in issues related to the DNS and particularly its economic aspects. Represented at 9.8% of the overall participation rate, private sector actors addressed the domain name business in Benin and also the national ccTLD ".BJ".



We noted for this edition 2016 the participation of people from the domains of communication and administration.

Panel of speakers - 2016 edition

For the Public Forum of Communication / Presentations and tutorial we had nine (09) national and international speakers who have addressed themes that came closer to the theme of the 2016 edition.

Franck KOUYAMI (FGI Bénin)

System Engineer / Computer Networks and IT Project Manager, Deputy President of the Internet Governance Forum in Benin.

Hervé Hounzandji (Université de Lorraine)

Expert in Operating System and Administrator of the databases Oracle at the CHRU of Nancy. Lecturer at the University of Lorraine, Digital Consultant.

Mathias Houngbo (IGB@NET)

Developer and System Administrator, Network and Security. Defender of free and open-source software, the Internet, mobile, open standards and semantic web.

Maxime GODONOU-DOSSOU (B2SI Inc)

International Expert in Information Systems and Integrator of Computer Solutions, Former technical contact of Benin Telecoms with the IANA for the management ccTLD ".bj".

Pascal GIENGER (Google)

A specialist in fault tolerance and frustration, Pascal contributes to the improvement, scalability and availability of distributed systems.

Pierre DANDJINOU (ICANN)

ICANN's Deputy President for Africa since December 2012. He coordinates ICANN's engagement with various partners and is responsible for the implementation of ICANN's strategy in the region.

Ramanou BIAOU (World Internet Labs/AfricaDNSCheck)

Security Engineer and AfricaDNSCheck Project Coordinator. He is a member of the RSSAC-Caucus within ICANN and the DNSOP and 6LO working group at the IETF.

Stéphanie GLÈLÈ (ACXSIT)

Computer engineer, graduate of the University of Liège, with more than eight years of experience in the field of computer networks and telecommunications.

Yazid AKANHO (IGB@NET)

Telecom Engineer, passionate about the Internet ecosystem, mobile and next generation infrastructure networks.

B6 and BDSEC Working Group

The activities of the Benin IPv6 Task Force (B6) and Benin DNSSEC Task Force (BDSEC) working groups of the Benin DNS Forum have started since the 2015 edition. Their empowerment has enabled a new working strategy to be put in place involving more engineers and technicians of the Beninese community.

This synergy of action between different players along the DNS chain offers a great prospect for the implementation of new project perspectives, in particular:

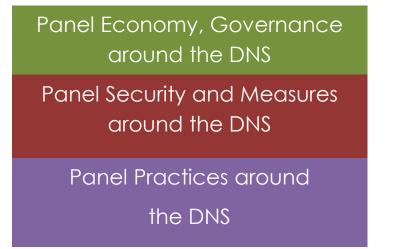
- Organizing the first HackaThon on DNS "DNSaThone" which will set up a prototype of the infrastructure of the Internet.
- Organizing a study on the resilience of the DNS in Benin and presenting the results at the Forum.

The working group also appreciated the collaboration of the incumbent Telecom Operator Benin Telecom SA for its availability to be accompanied for the implementation of DNS resolvers in its 4G infrastructure that provides access to the Internet.

Content of the presentations and communications

The various papers and presentations were divided into three main themes and each of the themes constituting a panel.

Three main panels followed one another in the general public forum in addition to the tutorial.



Panel Economy, Governance around the DNS

Description of the Panel

The "Economy and Governance around the DNS" panel addressed the major challenges of the governance of the Internet and its critical resources in Benin.

This panel also emphasized issues of governance of DNS Root Server security by addressing the rolling of the KSK keys of the DNS root.

The panel's presentations began with a general introduction on the DNS, its functioning and the major role it plays in the Internet's world today.

Communications during the Panel

Three (03) papers were presented in the "Economy and Governance around DNS" panel:

Introduction to DNS, Stéphanie GLÈLÈ (ACXSIT)

In her presentation, Stéphanie Glèlè addressed the history and origin of the DNS protocol. During this presentation, the naming structure and the distributed character of the DNS were presented for a very broad understanding of the protocol's operating model.

The different components of the DNS have also been showcased. Thus, the different levels of delegation, the DNS architecture and the (most common) DNS zone records were explained.

The DNS resolution mechanism was also presented as well as the various organizations involved in the management of a domain name, from ICANN to registrars and from the domain owner to registrants.

Panel Economy, Governance around the DNS

 The governance models of ccTLDs in the world and in Benin, Franck KOUYAMI (FGI Bénin)

This communication has made the participants in the Benin DNS Forum aware of the governance models of ccTLDs in the world. Through a synthesis, the speaker showed the interest and weaknesses of each model while referring it to Benin, which is in the process of adopting and implementing its ".BJ" management model.

After some reminders on DNS and Internet Governance, the speaker explained the importance of a ccTLD and the actors involved in its management before presenting the different models such as a foundation in Switzerland, association in France, Business in the USA, and a model of public/private partnership in Senegal. This presentation of the state of the current models allowed the participants to understand that there are no fixed models.

In presenting the situation in Benin (.BJ) it appeared that there is no model applied to the management of ".BJ" which is still managed by the incumbent Benin Telecom. While presenting the problems faced by the national ccTLD, he also mentioned the possible solutions for its impact. These include implementation of recommendations from the 2014 feasibility study for the ".bj" management structure by Networks & Solutions Technologies (TRS) - www.trstech.net and especially the opening of a genuine inclusive debate on the governance of ".bj".

Panel Economy, Governance around the DNS

Bearing the Root Zone KSK, Pierre DANDJINOU (ICANN)

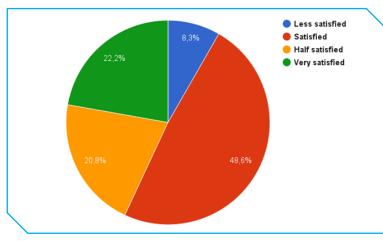
The Deputy President for ICANN's engagement in Africa made his presentation on the Key Signing Key Rollover (KSK) of the root of the Internet. After a DNS reminder and securing the DNS with its DNSSEC exception, he introduced the meaning of the Key Signing Key (KSK), what it serves and why ICANN should replace it with new keys.

Changing the primary pair of cryptographic keys used in the domain name system security extensions (DNSSEC) protocol, commonly referred to as the KSK of the root zone will be a first since it was originally generated in 2010, recalled The speaker before giving the important dates of this deployment process.

He also invited the Beninese and African technical community to be attentive to the issues concerning the turnover of these keys, specifying that the actors responsible for the validation of DNSSEC must ensure that their systems are updated with the public part of the new KSK to make sure their users have no trouble for free Internet access.

Appreciation of the Panel by participants

As a result of the evaluation, an overall assessment of more than 90% satisfaction was obtained.



Panel Security and Measures around the DNS

Description of the Panel

The "Security and Measurements around the DNS" panel is made up of 3 speakers who have addressed the security aspects of the DNS and the metrology of the Internet.

Denial of Service (DDoS) attacks on the DNS and security of email messages (e-mail) with the DANE and DNSSEC protocol were presented with demonstration. While showing the various possible vulnerabilities on a DNS infrastructure and the insecurity in the transmission of our emails, the speakers illustrated different cases and proposed solutions to protect themselves.

The metrology part of the DNS was focused on the need to make measurements on the Internet and especially how the measures allow to have a very resilient Internet infrastructure. The measurement model presented is based on the ATLAS probes of the RIPE NCC. This allowed the participants to discover the wide open network of measures and they were invited to contribute by hosting the Atlas probes in Benin.

Communications during the Panel

 Using a Denial of service attacks, Hervé Hounzandji (University of Lorraine)

The speaker gave a general reminder about the concepts and principles of the network, before addressing the different types of denial of service attacks and especially those using the DNS. After exposing some instances of insecurity of DNS servers in Benin and around the world, their poor configuration and therefore the response to queries to which they should not, it was recalled that there are no standardized solutions to completely avoid denials of service but just solutions to limit the problem. This is possible by preventing IP spoofing, limiting traffic and closing resolvers for example.

Participants were invited to put into practice good practices in the configuration of DNS servers and to update their operating systems whose obsolescence is often a source of vulnerability.

Public Forum of communications and tutorial

Panel Security and Measures around the DNS

Secure email with DANE and DNSSEC, Pascal GIENGER (Google)

This presentation allowed participants to understand how DNS through its DNSSEC security extension and the DANE protocol can be the primary security factor to avoid spoofing. Certification Authorities (CAs) provide services that secure our online communications, while those authorities are not exempt from potential vulnerability and are also very expensive.

The speaker then tried to demonstrate the possibility of securing our exchanges with or without the CAs based on the DNSSEC and the DANE protocol.

After explaining the principle of certificates and the basis of the DANE and DNSSEC protocol, the speaker outlined the problems and limitations associated with the use of CAs for certificates.

As a solution, the use of the DANE protocol for information on AC / Cert and its benefits was presented. He then proceeded to transpose these aspects to e-mails that are hosted at vendors, thus able to use DNSSEC.

This presentation was followed by a practical demonstration.

Benin is the first Francophone African country for the reception and connectivity of Atlas probes

0.20% of global probes

Benin DNS Forum is working to reach

0,40% from now to 2017

Source : https://atlas.ripe.net/results/maps/density/

Public Forum of communications and tutorial

Panel Security and Measures around the DNS

 DNS measurements with Atlas probes, Ramanou BIAOU (World Internet Labs/AfricaDNSCheck)

This presentation discusses metrology on the Internet, and particularly measures on the Internet. After a presentation of the RIPE NCC Atlas probes, the speaker explained the non profit and voluntarism nature of the project to build a large global Internet measurement network.

Some international and Benin figures on the connectivity of Atlas probes have been presented.

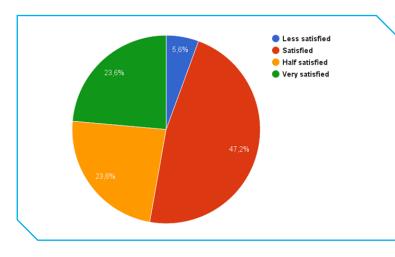
Participatory project processes and how to host a probe and measure were mentioned.

The different tools available for analyzing and using APIs were presented to the different participants of the Forum.

In the end, the probes were distributed to participants wishing to host an Atlas probe and make measurements on the Internet.

Appreciation of the Panel by participants

Overall assessment of this panel shows overall satisfaction of about 95% expressed by participants as a result of the evaluation.



Description of the Panel

The third and final panel of this second edition of the DNS Forum is "Practices around the DNS". This panel addressed issues related to DNS in the Internet of Things (IoT) and privacy with the IPv6 protocol.

The two (2) speakers of this panel presented respectively the stakes of the Internet of the things and the adaptation of the Internet resources and particularly the DNS (DNSNA) to the new connected things that invade the ecosystem of the Internet.

The issue of privacy with IPv6 has been exposed. Despite its undeniable strengths, a major debate in the technical community has opened on the issues of privacy that arise with this protocol. The context of automatic configuration relying on the MAC address has been presented and the solutions to better protect itself from its privacy with IPv6 present.

Communications during the Panel

The Place of DNS in the Internet of Things, Yazid AKANHO (IGB@NET)

After a reminder on the internet of the Things, the problems about these things were listed. They are particularly relevant to the dynamic topology, to the number and scale of the global use of connected things. The main objective of the Internet of Things is to make the objects interact with each other, to improve the user experience and the everyday life. The speaker recalled that a thing (keys, tablets, etc.) connected and even sometimes anodyne thing like the toothbrush, cars and pointers) is a physical entity with a unique identifier. The four fundamental problems of the Internet of objects, namely addressing, naming, discovery and access, were presented.

Public Forum of communications and tutorial Panel Practices around the DNS

Some possible solutions were discussed. Some common solutions adopted in the technical environment were presented to the participants including the IPv6 to solve the addressing problem while naming and identifying by protocols such as UUID, EPC, IRI and URI; as well as the DNS improvements to resolve the discovery problem (DNSNA).

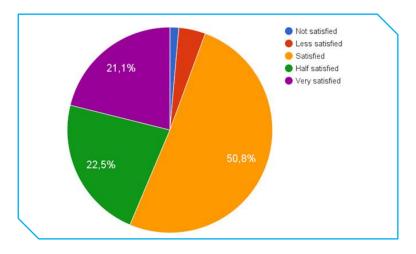
IPV6 and privacy, Mathias HOUNGBO (IGB@NET)

This presentation was focused on the privacy with IPv6. The speaker outlined the objectives of this presentation before recalling that the future of the Internet is addressing IPv6. He talked about the advantages of this protocol and stated that NAT will no longer be needed. He also informed all participants that despite all its advantages, one of the disadvantages of IPv6 is the filing and the possibility of identification of IPv6 terminals and thus of users of an IPv6 network. This is due to the IPv6 configuration (The network prefix that is defined by the ISP and the interface identifier that consists of the remaining bits and which identifies an interface).

Finally, the speaker showed the avenues of solutions developed to avoid problems of file. Two RFCs have been implemented: RFC 4941, which allows temporary IPv6 addresses to be made temporary, and RFC 7217 to create non-predictable and nonstable interface identifiers by default. This RFC reinforces the anonymity that one can have by taking a public IP.

Appreciation of the Panel by participants

This panel recorded a satisfaction rate of more than 90% by participants in the evaluation of the Forum.



Public Forum The Tutorial

As with each edition, a tutorial is presented during the DNS Forum. It allowed a technical demonstration of the DNS to all the participants.

This year the theme of the tutorial is: "Using DNS in Microservices"

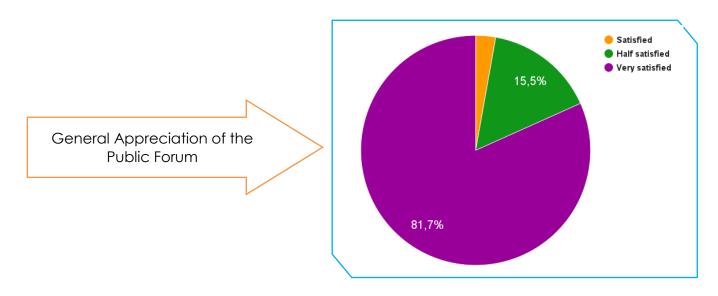
Presented by Maxime GODONOU-DOSSOU (B2SI, Inc)

This tutorial covered all the micro-services that rely on the use of DNS. The speaker emphasized the practical case of the Cloud. After defining the Cloud, he first approached its advantages: optimization solution, use on demand, scalable, time saving, human resources and financial. He then explained the different variants of Cloud: Software as a Service (SaaS), Platform as a Service (PaaS), Application as a Service (AaaS), Anything as a Service. He highlighted the difference between cloud and virtualization before ending up deploying a web site with two command lines.

Appreciation of the public Forum by participants

In order to improve the upcoming editions of the Benin DNS Forum, an evaluation has been proposed to collect the opinions, comments and recommendations from the participants.

The graph below gives an overall assessment of the public forum by the participants who responded to the evaluation.



The synthesis of this assessment shows the strengths of the Benin DNS Forum:

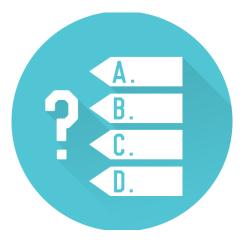
- Warm reception organization
- Discussions on .BJ by participants
- Presentations and demo on DNS security
- Presentation of Atlas probes
- Presentation of cctld governance models in the world and in Benin
- Privacy and IPv6 Aspects
- Using DNS in micro-services
- Introduction to the DNS Forum, the DNS Forum news
- The DNS Quiz Show
- Question-and-answer exchanges with speakers

Recommendations of participants

The participants proposed recommendations for the improvement of the forum, they are listed as follows:

- More time for more demos and practical cases of some technical communications
- Improvement of the visuals for the projection and the communication media of the speakers
- Make the public forum in two (02) days in order to have more time for presentations
- Have more female speakers
- Adapting the content of the speakers to the participants' profile

DNS QUIZ SHOW



The DNS Quiz Show is the moment of entertainment and learning during a quarter-hour with participants.

How is it organized?

Participants answer a quiz in the form of multiplechoice DNS questions arise from the exchanges and communications of the public forum. This is why the DNS Quiz Show is scheduled at the end of the day.

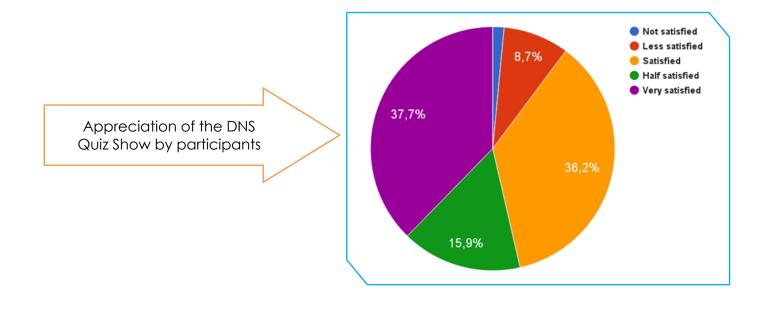
In a very delighted atmosphere, the participants of the 2016 edition answered the ten (10) questions asked.

The evaluation is done in pairs, the participants having obtained the highest marks received awards that were offered by the sponsors of this second edition.

Approximately thirty (30) prizes were awarded at the DNS Quiz Show.

This initiative has the highest rate of appreciation. 37.7% of "very satisfactory" on an overall satisfaction of about 90%.

Forum Public DNS Quiz Show



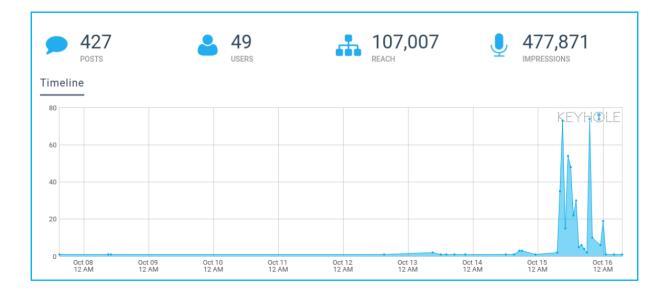


Remote participation and communication on social media

For this second edition, the Benin DNS Forum has particularly used social networks to communicate before, during and after the forum on all the activities and its various partners.

This mobilization through social media has enabled over 400 posts (Twitters, FaceBook, Blog, Etc.) of more than 49 users who have reached over 100,000 people.

The remote participation was made possible by online broadcasting enabling people from other countries to live follow all the presentations and also to contribute to the discussions.



The achievements of this second edition of the Benin DNS Forum open up prospects for the third edition in 2017.

- In addition to the four (04) perspectives of the Woman DNS Academy program (page 22), the following activities will enrich the DNS Forum next year.
- Organize an open panel (1 hour) of exchange and discussion on the DNS and the Internet in Benin. This panel will involve different players including ISPs, telecom operators, government, technical community and ccTLD.
- Initiate the DnsaThone (Hackathone on the DNS). The technical actors will work non-stop on the implementation of a prototype DNS infrastructure on the Internet and above all on the application of good practices and the implementation of various security aspects such as an anti-DoS / DDoS, DNSSEC, DANE, etc.
- This initiative will allow those who wish to participate in a unique experience sharing good practices but also learning about the DNS infrastructure.
- Organize a study on the resilience of the DNS in Benin and present the results at the Forum. This study will allow based on well-defined and measurable technical criteria, to assess the quality of the DNS service of operators, ISPs and public services.

Official Partner "Platinum Sponsor"



Official Partners "Gold Sponsor"









Sponsors of Bénin DNS Forum













CONCLUSION

The Internet is more and more present in our everyday uses and becomes the basis of activities in different sectors in Africa and particularly in Benin. It is timely to look at its resilience and critical resources. A local initiative similar to the Benin DNS Forum, carried out by various organizations, is an effective response to the challenges of the Internet and especially the DNS.

After its first edition in 2015 and the second edition in 2016, the Benin DNS Forum is now known as the "go to place" in the arena of high-level debates on the security of the Internet and its DNS protocols. The participation statistics and the support of various organizations at national and international level at this meeting demonstrate, if need be, its importance and relevance. Thanks to this inclusive chain of partners, sponsors and local support organizations, the 2016 edition of the Benin DNS Forum was a success at different levels.

First, at the institutional level, the support to the Woman DNS Academy programme and the stakeholders' interest in the discussions of the public forum around the use of the DNS give a strong signal to an awareness of the national stakeholders around the economy, Governance and security of the Internet infrastructure. We can already rejoice at the obvious willingness of the incumbent telecoms operator Benin Telecom SA to implement DNS resolvers in its 4G infrastructure that provides Internet access.

Then, at the level of the Beninese technical community, there is a growing interest in Internet-related issues and the role of each actor in setting up a multi-actor ecosystem for the resilience of the Internet in Benin. For example, the Benin IPv6 Task Force (B6) and Benin DNSSEC Task Force (BDSEC) Benin DNS Forum working groups, made up of engineers and volunteer technicians from the Beninese community, work to stimulate decision-making bodies in the ICT sector to take into account the aspects of the DNS in the definition of the institutional and digital development policy framework.

Finally, at the level of international organizations such as ICANN, La Francophonie, ISOC, governance of the Internet and its critical resources, women's participation in the ICT sector and young people's digital entrepreneurship are now included in their top priorities agenda in the ICT sector. This justifies the importance of the support they provide to the organization of the Benin DNS Forum.

While the third edition in 2017 is on the horizon, new perspectives are opening up to help to sustainable the achievements of the past editions. These include projects on the DNS, among others: the "DNSaThone", which will set up a prototype of the Internet infrastructure and a study on the resilience of the DNS in Benin to be presented during the next Forum by 2017.



More photos of BENIN DNS FORUM 2016 here: www.photo.dnsforum.bj

