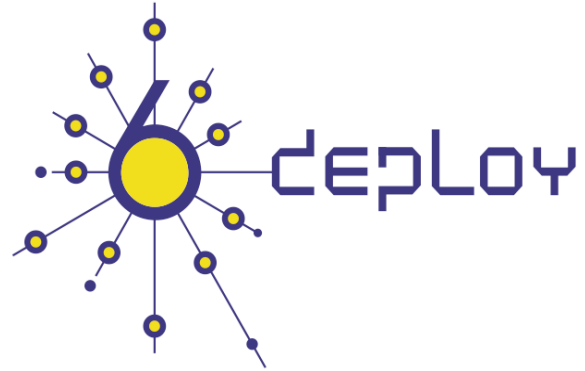




e-infrastructure



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Abstract:

This deliverable reports on three workshops that were held in the Latin America / Caribbean region. Specifically, this deliverable reports on workshops that took place in Quito (Ecuador), Santa Cruz (Bolivia), and Asunción (Paraguay). The presentation material is listed, the attendees and their affiliations are given, and the opportunities for further co-operation and follow-up actions are described.

Keywords:

IPv6, Support, Training, Testbeds, Modules, 6DISS, 6DEPLOY, Hands-on exercises

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Revision History

The following table describes the main changes to the document since created.

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v0.1	13/04/2010	Document creation	Alvaro Vives (Consulintel)
v1.0	27/04/2010	Document editing	Alicia Higa, Martin Potts (Martel)

Executive Summary

One of the main activities in the 6DEPLOY project is to organise workshops to train the different Internet communities in the areas of IPv6 deployment, configuration, and usage. This project is a follow up of previous project activities within and outside the Framework Programmes of the European Commission.

This deliverable reports on three workshops that were held in the Latin America / Caribbean region. Specifically, this deliverable reports on workshops that took place in Quito (Ecuador), Santa Cruz (Bolivia), and Asunción (Paraguay). The following workshop details are described in this report: a) the workshop attendees and their affiliations, b) the programme outline, c) the material presented, and d) an assessment of the opportunities for further co-operation and follow-up actions planned.

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1. INTRODUCTION

1.1 6DEPLOY Objectives

The following comprise the 6DEPLOY objectives:

- organize workshops for the e-Infrastructure community and give practical advice and hands-on support for deploying IPv6 in their environments;
- work on deployments in Europe and in developing countries, exchanging experiences and best practices;
- improve the competitiveness of European industry by sharing experiences from IPv6 deployments in other regions;
- gain expertise with which to support *more commercial* deployments in European industries (e.g. Emergency Services, Health, Broadcast, Transport, Schools, Environment, Gaming, etc.);
- help to build consensus between European researchers by enabling and exploiting synergy among related projects (e.g. GÉANT-2, SEEREN-2, SEE-GRID, EUMEDCONNECT, CLARA, ALICE);
- encourage and enhance the effectiveness of the coordination between National and pan-European e-Infrastructure initiatives by being a focal point for IPv6 activities, giving IPv6 training, and supporting IPv6 deployments;
- open up the ICT programme to the participation of third country organizations in International Cooperation Partner Countries, including countries in Africa, Asia, and Latin America, by involving organizations that influence e-Infrastructures on those continents;
- improve scientific cooperation between Europe and the declared target regions (Africa, Asia, and Latin America) by exchanging knowledge and experiences through direct practical support for deployment, training events, etc. The project therefore also helps support other Community policies, most notably the development policy. Telecommunications infrastructures and the capability to access information worldwide are key measures of a country's progress. IPv6 has been a cornerstone of European Internet policy for several years; and
- support interoperability and standards by sharing information on the latest IPv6 standards, equipment hardware and software releases, and IPv6 policies (RIRs).

One of the main activities in the 6DEPLOY project is therefore to organise workshops to

train the different Internet communities in the areas of IPv6 deployment, configuration, operation, and management. This activity is a follow up of previous project's activities within and outside the Framework Programmes of the European Commission.

1.2 6DEPLOY Workshop Methodology

The 6DEPLOY methodology relating to the workshops is shown in the diagram below:

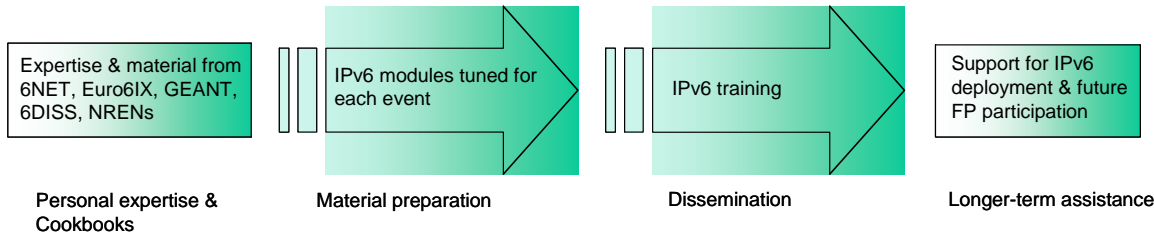


Figure 1-1: 6DEPLOY methodology (diagrammatically)

The approach is to use course material available from 6DISS and elsewhere that relates to IPv6, the e-learning course, and the 6NET IPv6 Deployment Guide book, together which will form the basis of the training material. This training material is supplemented with knowledge from partners' participation in events such as IPv6 Forum meetings, IPv6 Task Force meetings, Internet2 meetings, and the IETF, and from the experience of similar activities brought to the project by the representatives of the Internet Registries in North and South America, the Asia-Pacific region, Africa, and Europe. The knowledge is disseminated through training sessions that, for practical reasons, are often held in conjunction with AfriNIC, LACNIC, APNIC, AfNOG, APRICOT, and ISOC meetings.

After each workshop, feedback reports are collected from the participants, enabling 6DEPLOY to assess the impact of the presentations and to identify any areas that need improvement.

The full set of dissemination materials (including the e-learning course and 2 managed testbeds) is available from 6DISS and partners' own sources. This includes presentation slides on all issues of Internet deployment and evolution; especially IPv4-IPv6 transition strategies, DNS, DHCP, routing, QoS, MobileIP, multicast, renumbering, auto-configuration, security, monitoring and management tools, and applications. This material was described in the deliverable D1.1: "IPv6 training material and related usage procedures".

This deliverable reports on three workshops that were held in the Latin America / Caribbean region. Specifically, this deliverable reports on workshops that took place in

Quito (Ecuador), Santa Cruz (Bolivia), and Asunción (Paraguay).

Chapter 2 of this document explains the general motivation for running IPv6 workshops, and chapters 3, 4, and 5 describe the specific details of each workshop, in terms of the attendees, the modules that were presented, and the “hands-on” exercises (if appropriate). Chapter 6 identifies opportunities for further collaboration in the region and follow up actions, and Chapter 7 provides some general conclusions.

2. THE WORKSHOPS (GENERAL)

Workshops are one of the main mechanisms used by 6DEPLOY to transfer information and to build collaboration.

6DEPLOY is structured to provide an ideal platform for the discussion of deployment scenarios and the exchange of best practices, thereby avoiding duplication of effort, by preventing the waste of time on techniques that are known not to have been deprecated, and generally making the most efficient use of the available resources in a region. Partners in 6DEPLOY have deployed IPv6 on a production basis in their own NRENs and University networks, and have documented their experiences in Cookbooks and in IETF informational/best common practice RFCs. The manufacturer in the consortium is building IPv6 products.

The workshops are not only intended to lead to an improved quality of the Internet infrastructure in developing countries, but will also raise the competence of the attendees and, in exploiting the personal contacts made through 6DEPLOY, facilitate and encourage the participation of their organizations in future FP7 calls and beyond.

Impacts from the workshops will include:

- a positive effect towards preventing the “brain drain” from developing countries by bringing interesting and state-of-the-art activities into these regions, thus making information and knowledge resources accessible to scholars both locally and globally;
- an expansion of the conditions for growth by enabling the exchange of ideas, launching joint experiments and projects, disseminating RTD results, and activating market forces; all of which are substantial elements in the process of regional development;
- making European research and industrial concerns aware of the highly skilled personnel who can contribute to the urgently needed improvement of ICT infrastructures, resulting in an increase of the demand for specialized services provided by the highly skilled academics and researchers of the region; and
- the identification of IPv6 deployment activities in the region and an exchange of information about deployment experiences.

While IPv6 standards and services are quite stable, regional variations in practices and operations will require slightly different approaches for collaboration and dissemination. Therefore, the material for these workshops was collected, and the workshop

schedules, formats, and contents were tailored in conjunction with the local organisers so as to suit the type of participants, the subjects to be addressed, the location, the host organization, the sponsors, etc.

3. THE 6DEPLOY WORKSHOP IN QUITO (ECUADOR)

This day-and-a-half workshop was held in the Spanish language in Quito (Ecuador) during the 7th and 8th of July 2009. This workshop was part of LACNIC's IPv6 Tour 08/09. In the following paragraphs we provide information about the workshop, including the programme outline, and the material that was presented.

Details of the workshop and the training material used can be found in 6DEPLOY's project web site:

http://www.6deploy.eu/index.php?page=20090907_quito_ecuador

3.1 Overview

Individuals present at the workshop included Jordi Palet from Consulintel representing 6DEPLOY, and Juan Carlos Alonso from LACNIC.

The first part of the workshop was aimed at a broad spectrum of participants (ISPs, organizations, end users) and included speeches from local authorities and from LACNIC on topics related to Internet resources, addresses, etc.

During the second part of the tutorial, specific IPv6 material was presented, including an introduction to basic IPv6, concepts on the transition and coexistence of IPv4 and IPv6 were presented, as well as different transition mechanisms, some of which are automatic, that explain the growth of IPv6 traffic that is being observed at global level despite its low level of deployment on the part of ISPs. Recommendations were made regarding IPv6 deployment at ISPs and corporate networks.

The presentations were conducted in Spanish, in order to accommodate the local audience.

3.2 Attendees

Below is a list of people that attended at least one session:

No.	Name	Affiliation
1	Alejandro Rodriguez	Stealth Telecom de Ecuador
2	Alex Troya Aldaz	SUPERTEL
3	Alexis Barreto M	CONECEL
4	Ana Gabriela Valdiviezo Black	Secretaría Nacional de Telecomunicaciones
5	Andrea Salcedo	Telefónica Ecuador
6	Carlos Contreras Gallo	SENATEL
7	Carlos Gabriel Córdova	Universidad Técnica Particular de Loja (UTPL)

8	Cristian Heredia Real	Transportadora Azuaya
9	Dario Pancar	Grupo TV Cable
10	Diego Vargas	MILLTEC SA
11	Fabián Mejía	AEPROVI
12	Fausto Vasco Moncayo	USFQ
13	Fernando Cabrera	Telefónica Ecuador
14	Fernando Fray	INFRATEL
15	Fernando Salas	NOVANET
16	Gabriel Cueva	Global Crossing
17	Galo Pérez	Panchonet S.A
18	Gino León	SENATEL
19	Gustavo Indacochea Sancan	PUNTONET S.A
20	Ibeth Davila V.	CELEC-TRANSELECTRIC
21	Jonathan Moscoso Jaramillo	SUPERTEL
22	Jorge Alberto Tapia	ALIANZANET
23	José Gómez de la Torre	SUPERTEL
24	Juan Carlos Escandón	Telefónica Ecuador
25	Juan Fernando Velez	SENATEL
26	Juan José Collantes de Lucca	NIC EC
27	Juan Paredes	CNT SA
28	Juan Ramos	USFQ
29	Luis Vinuesa	SUPERTEL
30	Marco Sancho Montalvo	Corporación Nacional de Telecomunicaciones
31	Mauricio Toalombo	SUPERTEL
32	Oscar Fabián Herrán Renqifo	CNT SA
33	Pablo Armijos	Megadatos
34	Ramiro Hurtado F.	SUPERTEL
35	Roberto Cortez	TEUNO
36	Roberto Rubio	TELCONET
37	Rosario Achig	CEDIA
38	Santiago M. Chamorro Carrillo	SIFUTURO
39	Santiago Torres	Grupo TV Cable
40	Vitor Salazar	SENATEL

Table 3-1: Quito (Ecuador) Workshop list of participants

The participants represented a wide range of the ICT community. There were technical people whose knowledge about IPv6 ranged from almost no knowledge to having significant experience with IPv6 deployment. Some had already performed IPv6 experiments or were planning some level of deployment at their institutions.

3.3 Workshop programme

The agenda was agreed upon after close collaboration with the local organizers. The meeting agenda and the related material were submitted in advance so that the local organizers could decide which topics should be prioritized and so manage the logistics accordingly. The program of the workshop is presented in the following table:

Date	Time	Title of session
7/09/2009	09:00-09:30	Opening: Words from Ecuador's Government Representative
		Opening: Words from LACNIC's Representative
7/09/2009	09:30-09:45	Gestión de los Recursos de Internet en América Latina & Caribe y el mundo
7/09/2009	09:45-10:05	Cómo obtener recursos de Internet en la region
7/09/2009	10:05-10:20	Proceso de Desarrollo de Políticas de Asignación de recursos numéricos de Internet en LAC
7/09/2009	10:30-10:45	LACNIC en el marco de la cooperación regional y el desarrollo de la Sociedad de la Información
7/09/2009	10:45-11:05	Estado de Situación del Consumo de Direcciones IPv4 y despliegue IPv6. Desafíos y cooperación regional en la promoción del nuevo protocolo de Internet
7/09/2009	11:05-11:25	Conformación del IPv6 TASK FORCE del Ecuador
7/09/2009	11:25-12:15	La Constitución y las TICs
7/09/2009	13:15-14:45	Introducción a IPv6
7/09/2009	14:45-16:00	Prácticas en hosts
7/09/2009	16:00-17:00	Mecanismos de transición IPv4-IPv6
8/09/2009	09:00-11:00	Prácticas de transición
8/09/2009	11:10-12:10	Casos de despliegue en redes de banda ancha
8/09/2009	12:10	Event Closing

Table 3-2: Quito Workshop program

3.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
Gestión de los Recursos de Internet en América Latina & Caribe y el mundo	Juan Carlos Alonso	LACNIC
Cómo obtener recursos de Internet en la región	Juan Carlos Alonso	LACNIC
Proceso de Desarrollo de Políticas de Asignación de recursos numéricos de Internet en LAC	Juan Carlos Alonso	LACNIC
LACNIC en el marco de la cooperación regional y el desarrollo de la Sociedad de la Información	Juan Carlos Alonso	LACNIC

Estado de Situación del Consumo de Direcciones IPv4 y despliegue IPv6. Desafíos y cooperación regional en la promoción del nuevo protocolo de Internet	Juan Carlos Alonso	LACNIC
Conformación del IPv6 TASK FORCE del Ecuador	Francisco Balarezo	AEPROVI
La Constitución y las TICs	Francisco Balarezo	AEPROVI
Introducción a IPv6	Jordi Palet	Consulintel
Prácticas en hosts	Jordi Palet	Consulintel
Mecanismos de transición IPv4-IPv6	Jordi Palet	Consulintel
Prácticas de transición	Jordi Palet	Consulintel
Casos de despliegue en redes de banda ancha	Jordi Palet	Consulintel

Table 3-3: Quito Workshop list of modules used

3.4.1 Modules

Below is a brief description of each module's content:

- **Introducción a IPv6:** This module explains why a new version for IP, IPv6, has been developed. A brief history of IPv6, its motivation and benefits were presented along with IPv6 packet header, extensions headers and the differences with IPv4 headers. Packet size issues and upper layer considerations are also treated. In addition, IPv6 addressing architecture, the different types of addresses (unique local IPv6 addresses, interface IDs, multicast addresses), their textual representation, how these are built and related to a layer 2 address, were explained.
- **Mecanismos de transición IPv4-IPv6:** This module explains different approaches to deploy IPv6 in an IPv4 environment. Transition concepts are introduced and several transition mechanisms are covered: Dual Stack, tunnels, tunnel broker, 6to4, Teredo, Softwires and translation (at various layers).
- **Casos de despliegue en redes de banda ancha:** This module focus on broadband access networks and IPv6 deployment related issues.
- **Prácticas en hosts:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts.
- **Prácticas de transición:** Practice basic transitions mechanisms using hosts.

4. THE 6DEPLOY WORKSHOP IN SANTA CRUZ (BOLIVIA)

This day-and-a-half workshop was held in the Spanish language in Santa Cruz (Bolivia) during the 9th and 10th of July 2009. This workshop was part of LACNIC's IPv6 Tour 08/09. In the following paragraphs we provide information about the workshop, including the programme outline, and the material that was presented.

Details of the workshop and the training material used can be found in 6DEPLOY's project web site:

http://www.6deploy.eu/index.php?page=20090909_santa_cruz_bolivia

4.1 Overview

Individuals present at the workshop included Jordi Palet, from Consulintel representing 6DEPLOY, and Juan Carlos Alonso from LACNIC.

The first part of the workshop was aimed at a broad spectrum of participants (ISPs, organizations, end users) and included speeches from local authorities and from LACNIC on topics related to Internet resources, addresses, etc.

During the second part of the tutorial, specific IPv6 material was presented, including an introduction to basic IPv6, concepts on the transition and coexistence of IPv4 and IPv6 were presented, as well as different transition mechanisms, some of which are automatic, that explain the growth of IPv6 traffic that is being observed at global level despite its low level of deployment on the part of ISPs. Recommendations were made regarding IPv6 deployment at ISPs and corporate networks.

The presentations were conducted in Spanish, in order to accommodate the local audience.

4.2 Attendees

Below is a list of people that attended at least one session:

No.	Name	Affiliation
1	Alexis García Sandoval	Farmacorp SA
2	Betty Meneses	Universidad Privada Domingo Savia
3	Edgar Arandía Alvarez	UTEPSA
4	Eivy Pereyra Carvalho	UEB
5	Franz Bismark Carriazo Palma	COTAS LTDA
6	Gonzalo Landaeta	CBTI
7	Heriberto Cuellar Carmona	AXS Bolivia

8	Javier Alanoca	UPSA
9	Jhinny Dávalos	UTEPSA
10	Jorge Gonzales	CLEARTEC LTDA
11	Julio Solano	Universidad Privada de Santa Cruz de la Sierra
12	Karem Infantas Solo	Generaknow
13	Lourdes Villavicencio	COTAS LTDA
14	Luis René Gamarra Urdininea	Univ.UTEPSA
15	Mirco Javier Patzy Fortun	AXS Bolivia
16	Nelson Fernandez	TIGO (TELECEL)
17	Oscar A.Leon Ortiz	UPSA
18	Oscar Miguel Talavera Antelo	Independiente
19	Rolando Llareced A.	UTEPSA
20	Sarah Mirna Martinez Cardona	UAGRM
21	Sergio Daniel Prado Vargas	UPSA
22	Walter Parada Roda	Universidad Privada de Santa Cruz de la Sierra
23	Wilmer Campos Saavedra	Univ. Domingo Savio

Table 4-1: Santa Cruz (Bolivia) Workshop list of participants

The participants represented a wide range of the ICT community. There were technical people whose knowledge about IPv6 ranged from almost no knowledge to having significant experience with IPv6 deployment. Some had already performed IPv6 experiments or were planning some level of deployment at their institutions.

4.3 Workshop programme

The agenda was agreed upon after close collaboration with the local organizers. The meeting agenda and the related material were submitted in advance so that the local organizers could decide which topics should be prioritized and so manage the logistics accordingly. The program of the workshop is presented in the following table:

Date	Time	Title of session
9/09/2009	09:00-09:30	Opening: Words from Bolivia's Government Representative
		Opening: Words from LACNIC's Representative
9/09/2009	09:30-09:50	Gestión de los Recursos de Internet en América Latina & Caribe y el mundo
9/09/2009	09:50-10:10	Cómo obtener recursos de Internet en la región
9/09/2009	10:10-10:30	Proceso de Desarrollo de Políticas de Asignación de recursos numéricos de Internet en LAC
9/09/2009	10:45-11:00	LACNIC en el marco de la cooperación regional y el desarrollo de la Sociedad de la Información
9/09/2009	11:00-11:20	Estado de Situación del Consumo de Direcciones IPv4 y despliegue IPv6. Desafíos y cooperación regional en la promoción del nuevo protocolo de Internet

9/09/2009	11:20-11:35	Open Mic
9/09/2009	11:35-13:00	Introducción a IPv6
9/09/2009	14:00-15:15	Prácticas en hosts
9/09/2009	15:15-16:45	Mecanismos de transición IPv4-IPv6
9/09/2009	17:00-18:00	Prácticas de transición
10/09/2009	09:00-10:00	Prácticas de transición (cont.)
10/09/2009	10:00-11:00	Casos de despliegue en redes de banda ancha
10/09/2009	11:00	Event Closing

Table 4-2: Santa Cruz Workshop program

4.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
Gestión de los Recursos de Internet en América Latina & Caribe y el mundo	Juan Carlos Alonso	LACNIC
Cómo obtener recursos de Internet en la región	Juan Carlos Alonso	LACNIC
Proceso de Desarrollo de Políticas de Asignación de recursos numéricos de Internet en LAC	Juan Carlos Alonso	LACNIC
LACNIC en el marco de la cooperación regional y el desarrollo de la Sociedad de la Información	Juan Carlos Alonso	LACNIC
Estado de Situación del Consumo de Direcciones IPv4 y despliegue IPv6. Desafíos y cooperación regional en la promoción del nuevo protocolo de Internet	Juan Carlos Alonso	LACNIC
Introducción a IPv6	Jordi Palet	Consulintel
Prácticas en hosts	Jordi Palet	Consulintel
Mecanismos de transición IPv4-IPv6	Jordi Palet	Consulintel
Prácticas de transición	Jordi Palet	Consulintel
Casos de despliegue en redes de banda ancha	Jordi Palet	Consulintel

Table 4-3: Santa Cruz Workshop list of modules used

4.4.1 Modules

Below is a brief description of each module's content:

- **Introducción a IPv6:** This module explains why a new version for IP, IPv6, has been developed. A brief history of IPv6, its motivation and benefits were presented along with IPv6 packet header, extensions headers and the differences with IPv4 headers. Packet size issues and upper layer considerations are also treated. In addition, IPv6 addressing architecture, the different types of addresses (unique local IPv6 addresses, interface IDs, multicast addresses), their textual representation, how these are built and related to a layer 2 address, were explained.
- **Mecanismos de transición IPv4-IPv6:** This module explains different approaches to deploy IPv6 in an IPv4 environment. Transition concepts are introduced and several transition mechanisms are covered: Dual Stack, tunnels, tunnel broker, 6to4, Teredo, Softwires and translation (at various layers).
- **Casos de despliegue en redes de banda ancha:** This module focus on broadband access networks and IPv6 deployment related issues.
- **Prácticas en hosts:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts.
- **Prácticas de transición:** Practice basic transitions mechanisms using hosts.

5. THE 6DEPLOY WORKSHOP IN ASUNCIÓN (PARAGUAY)

This one-day workshop was held in Spanish language in Asunción (Paraguay) on the 11th July 2009. This workshop was part of LACNIC's IPv6 Tour 08/09. In the following paragraphs we provide information about the workshop, including the programme outline, and the material that was presented.

Details of the workshop and the training material used can be found on 6DEPLOY's project web site:

http://www.6deploy.eu/index.php?page=20090911_asuncion_paraguay

5.1 Overview

Individuals present at the workshop included Jordi Palet, from Consulintel representing 6DEPLOY, and Juan Carlos Alonso from LACNIC.

The first part of the workshop included speeches from local authorities and from LACNIC to introduce the workshop.

During the second part of the tutorial, specific IPv6 material was presented including an introduction to basic IPv6, concepts on the transition and coexistence of IPv4 and IPv6 were presented, as well as different transition mechanisms, some of which are automatic, that explain the growth of IPv6 traffic that is being observed at global level despite its low level of deployment on the part of ISPs. Recommendations were made regarding IPv6 deployment at ISPs and corporate networks.

The presentations were conducted in Spanish, in order to accommodate the local audience.

5.2 Attendees

Below is a list of people that attended at least one session:

No.	Name	Affiliation
1	Alexander Wich	Universidad Católica
2	Alfonso Teodoro Gonzalez Rojas	Mesa Multisectorial de Software Libre/ANDE/APROANDE
3	Augusto Duarte	CONATEL
4	Elva Mónica Chaves Flores	TELECEL
5	Enrique Caboal Sementé	CONATEL
6	Gustavo Sebriano	Particular
7	Hugo Luis Velázquez Ayala	TELECEL
8	Javier Torres Gonzalez	TELECEL

9	Marcos Estigarribia	CONATEL
10	Patricia C.Candia Quiñonez	CONATEL

Table 5-1: Asunción (Paraguay) Workshop list of participants

The participants represented a wide range of the ICT community. There were technical people whose knowledge about IPv6 ranged from almost no knowledge to having significant experience with IPv6 deployment. Some had already performed IPv6 experiments or were planning some level of deployment at their institutions.

5.3 Workshop programme

The agenda was agreed upon after close collaboration with the local organisers. The meeting agenda and the related material were submitted in advance so that the local organisers could decide which topics should be prioritized and so manage the logistics accordingly. The program of the workshop is presented in the following table:

Date	Time	Title of session
11/09/2009	09:00-09:30	Opening: Words from Paraguay's Government Representative
		Opening: Words from LACNIC's Representative
11/09/2009	09:30-11:00	Introducción a IPv6
11/09/2009	11:15-12:30	Prácticas en hosts
11/09/2009	13:30-15:00	Mecanismos de transición IPv4-IPv6
11/09/2009	15:00-16:00	Prácticas de transición
11/09/2009	16:15-17:15	Prácticas de transición (cont.)
11/09/2009	17:15-18:00	Casos de despliegue en redes de banda ancha
11/09/2009	18:00	Event Closing

Table 5-2: Asunción Workshop program

5.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
Introducción a IPv6	Jordi Palet	Consulintel
Prácticas en hosts	Jordi Palet	Consulintel

Mecanismos de transición IPv4-IPv6	Jordi Palet	Consulintel
Prácticas de transición	Jordi Palet	Consulintel
Casos de despliegue en redes de banda ancha	Jordi Palet	Consulintel

Table 5-3: Asunción Workshop list of modules used

5.4.1 Modules

Below is a brief description of each module's content:

- **Introducción a IPv6:** This module explains why a new version for IP, IPv6, has been developed. A brief history of IPv6, its motivation and benefits were presented along with IPv6 packet header, extensions headers and the differences with IPv4 headers. Packet size issues and upper layer considerations are also treated. In addition, IPv6 addressing architecture, the different types of addresses (unique local IPv6 addresses, interface IDs, multicast addresses), their textual representation, how these are built and related to a layer 2 address, were explained.
- **Mecanismos de transición IPv4-IPv6:** This module explains different approaches to deploy IPv6 in an IPv4 environment. Transition concepts are introduced and several transition mechanisms are covered: Dual Stack, tunnels, tunnel broker, 6to4, Teredo, Softwires and translation (at various layers).
- **Casos de despliegue en redes de banda ancha:** This module focus on broadband access networks and IPv6 deployment related issues.
- **Prácticas en hosts:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts.
- **Prácticas de transición:** Practice basic transitions mechanisms using hosts.

6. OPPORTUNITIES FOR FURTHER CO-OPERATION

In all the workshops, the attendees were informed on how to stay in contact with the 6DEPLOY partners in case they have questions regarding IPv6 deployment, addressing plans, etc. In this respect, the role of the *helpdesk* was explained as being the way to submit questions. An e-mail to helpdesk@6deploy.org will be distributed to a mailing list composed of volunteers who are available to answer (or forward) any kind of questions, requests, etc. Also a web form can be used to send requests to the project.

Additionally, the attendees (and trainers from the region) can follow the e-learning course and/or check the availability of the 6DEPLOY remote labs and use these.

7. CONCLUSIONS

Workshops are a key mechanism through which information, knowledge, and know-how are transferred to less experienced countries and participants. The workshops enable us to build constituencies and raise awareness; disseminate, benchmark, and validate the research results from the EU's Framework Programmes; promote European technologies; exchange best practices; and offer information related to standards and interoperability issues.

Three 6DEPLOY workshops took place during the week of 7th to 11th July 2009. All of these workshops were coordinated by LACNIC, as a 6DEPLOY representative, with local authorities and collaboration with Consulintel. Based on previous projects and training activities, most of the IPv6 education material needed to start 6DEPLOY workshop training was available from the very beginning. The material included most of the issues of Internet deployment and evolution, especially IPv6 introduction, IPv4-IPv6 transition/co-existence strategies, and broadband issues.

Approximately 73 network engineers, system administrators, and regulators participated in the workshops. The topics presented were selected according to the participants' requirements.

During the 6DEPLOY lifetime, stakeholders will continue to enhance today's "knowledge database". The reader and interested parties are referred to the 6DEPLOY website to check for new material.

In summary, this workshop should be considered a success with regard to the dissemination of IPv6 in the Latin America / Caribbean region, though this is only the first of many steps towards the deployment of real IPv6 networks and services in the region.

8. REFERENCES

6DEPLOY website: <http://www.6deploy.eu>

6DISS website: <http://www.6diss.org>

Hands-on modules: <http://www.6deploy.eu/index.php?page=hands-on>

How-to organise an IPv6 workshop:

<http://6diss.6deploy.eu/workshops/workshop-guidelines.pdf>

Training the trainers workshop: <http://6diss.6deploy.eu/workshops/ttt/>

e-learning package: <http://www.6deploy.eu/index.php?page=e-learning>

6DEPLOY Workshops Agenda and detailed information:

<http://www.6deploy.eu/index.php?page=workshops>