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Abstract:
This deliverable presents a report from the full day workshop held in Salvador de Bahia (Brazil) during 26th May 2008, within the LACNIC XI meeting, 26th to 30th May 2008. 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.

Revision	Date	Description	Author (Organization)
v0.1	04/07/2008	Document creation	César Olvera (Consulintel) Álvaro Vives (Consulintel)
v0.2	10/07/2008	Content update	César Olvera (Consulintel)
v0.3	14/07/2008	Content and graphics update	César Olvera (Consulintel)
v0.4	23/07/2008	Attendees list update	César Olvera (Consulintel)
v0.5	28/07/2008	Completing data from workshops	Jordi Palet (Consulintel)
v0.6	28/07/2008	Minor updates regarding project template	César Olvera (Consulintel)

Executive Summary

One of the main activities in the 6DEPLOY project is to organize 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 presents a report from the workshop held in Salvador de Bahia (Brazil) during 26th May, within the LACNIC XI meeting, 26th to 30th May 2008.

The following is described in this report:

a) the workshop attendees and their affiliations.

b) the programme outline.

c) the material presented.

d) additional IPv6 activities performed such as the Sixth Latin American IPv6 Forum - FLIP-6 meeting, Latin America and the Caribbean IPv6 Task Force meeting, and IPv6 Experiment.

e) an assessment of the opportunities for further co-operation and follow-up actions planned.

f) an analysis of the feedback questionnaires from the participants.

Table of Contents

Figure Index

Table Index

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 infrastructure 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.

- 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 organize 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:
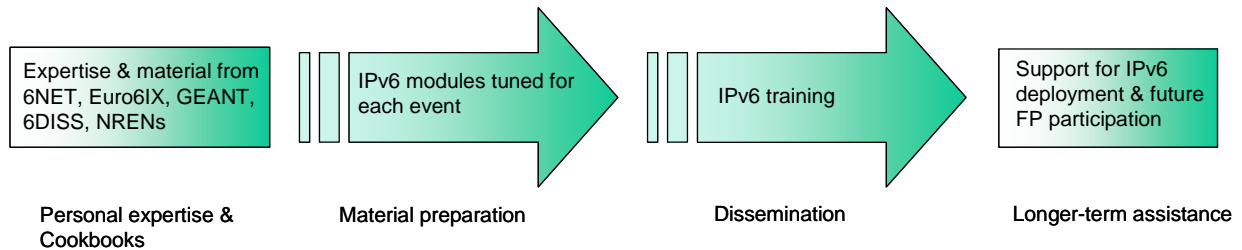
Figure 1-1: 6DEPLOY methodology (diagrammatically)

The approach is to use course material available from 6DISS and elsewhere relating to IPv6, the e-learning course, and the 6NET IPv6 Deployment Guide book as 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 will be collected from the participants, enabling 6DEPLOY to assess the impact of the presentations and identify any areas that need improvement.

The full set of dissemination material (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, Mobile IP, 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 document describes the 2nd of these IPv6 training workshops, which took place in Salvador de Bahia (Brazil) during 26th May, within the LACNIC XI meeting, 26th to 30th May 2008. The workshop was very well attended (approximately 100 participants) and comprised both slide presentations and hands-on exercises using local PC equipment. Due to the fact that only a short amount of time has passed since the start of the

project, the material comprised modules from Consulintel and CENIT (Centro Nacional de Innovación Tecnológica – National Technological Innovation Centre in Venezuela) adapted to the needs of the participants.

Chapter 2 of this document explains the general motivation for running IPv6 workshops, and Chapter 3 describes the specific details of this workshop, in terms of the attendees, the modules that were presented and the "hands-on" exercises that were performed, etc.

Chapter 4 briefly describes other IPv6 activities performed during LACNIC XI and supported by 6DEPLOY (Sixth Latin American IPv6 Forum - FLIP-6 meeting, Latin America and the Caribbean IPv6 Task Force meeting, and IPv6 Experiment).

Chapter 5 identifies opportunities for further collaboration in the region and follow up actions, and Chapter 6 summarises the analysis of the feedback questionnaires that were filled in by the participants.

2. THE WORKSHOPS (GENERAL)

Workshops are one of the main mechanisms used by 6DEPLOY to transfer information and 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 and not 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 the 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.

- 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 this workshop was collected, and the workshop schedule, format and contents were tailored in conjunction with the local organizers 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 SALVADOR DE BAHIA (BRAZIL)

This full day workshop was held in Spanish language in Salvador de Bahia (Brazil) during 26th May, within the LACNIC XI meeting, 26th to 30th May 2008. The workshop is described below, in the form of the attendees and their affiliations, the programme outline, and the material that was presented.

3.1 Overview

In continuation to the LACNIC strategy in supporting the outreach of IPv6 as well as in fomenting its development and utilization, the attendees of LACNIC XI meeting had the opportunity to participate in a full day IPv6 tutorial.

Being focused to ISPs does not mean that those without any knowledge about would not benefit from it.

The tutorial had an introduction about the technology and its standards. Giving a basic knowledge and points for future research and deployments.

Following this, the attendees will have the opportunity to learn important aspects of IPv6 deployment in ISP environments. For instance, addressing plan, routing plan, internal infrastructure with IPv6, security, documentation, etc.

Individuals present at the workshop included Jordi Palet (Consulintel), on behalf of both 6DEPLOY, and Francisco Obispo (CENIT - Centro Nacional de Innovación Tecnológica – National Technological Innovation Centre in Venezuela), on behalf of LACNIC, were in charge of presenting both the IPv6 modules and the hands-on modules.

3.2 Attendees

No.	Surname	First name	Affiliation
1	WATSON CARAZO	CARLOS	ACADEMIA NACIONAL DE CIENCIAS
2	CALVO	JÉSSICA	ACADEMIA NACIONAL DE CIENCIAS, NIC-INTERNET COSTA RICA
3	GUIMARÃES DE FARIA	SÉRGIO	ACESSA TELECOMUNICAÇÕES LTDA
4	GONZALEZ	RAMIRO	ANTEL
5	DROZ	MARIANO RAFAEL	ARIU (UNIVERSIDAD NACIONAL DE ENTRE RÍOS)
6	CARDOZO	JAIRO	ASSOCIAÇÃO COMERCIAL DE SÃO PAULO
7	CHRISPIM	MARCOS HENRIQUE	ASSOCIAÇÃO COMERCIAL DE SÃO PAULO
8	HERNANDEZ CELDEÑO	OLIVER ANTONIO	BANCO CENTRAL DE VENEZUELA
9	ALVAREZ	RODOLFO ARIEL	CABLEVISION S.A.
10	MANZANO	GREGORIO	CENIT

11	CAMPOS	CIRANO	CEPROMAT
12	FERRO SUÁREZ	CARLOS ANGEL	CITMATEL
13	NASCIMENTO	LUCAS FABRICIO DO	COM4 PROVEDOR DE SOLUÇÕES EM INTERNET
14	ZAGO	MARCO ANTONIO	COM4 PROVEDOR DE SOLUÇÕES EM INTERNET
15	STOCCO	MÁRCIO AUGUSTO	COMSAT BRASIL
16	NIEDBALSKI	JORGE	CRITIX SYSTEMS
17	AZEVEDO	EMERSON	CTIR/DSIC
18	PIMENTA	ROBERTO MOUTELLA PIMENTA	CTIR/DSIC
19	PINTO ESTEVES	LEONARDO	CTIR-GOV
20	RAQUEL	GATTO	DIPLOFOUNDATION
21	CORNEJO RAMOS	NELSON GEOVANNY	EASYNET S.A
22	GHISI KESTERING	TIAGO	ENGEPLUS INTERNET
23	GUERRERO VALAREZO	CARLOS LEOPOLDO	ESCUELA SUPERIOR POLITÉCNICA DEL LITORAL- ESPOL
24	CARMAGNANI	GIAMPAOLO	FORTE NETWORK
25	DANTAS	DIOGO	FORTE NETWORK
26	BLANCO INCER	JORGE	ICE
27	BLOTTA	JOSÉ PABLO	ICE
28	MATSUZAKI	YOSHINOBU	IIJ
29	MATOS	JUAN ANTONIO	INSTITUTO DOMINICANO DE AVIACION CIVIL (IDAC)
30	NÚÑEZ ACOSTA	LUIS GABRIEL	INSTITUTO DOMINICANO DE AVIACIÓN CIVIL (IDAC)
31	D'EGIDIO	ALEJANDRO FEDERICO	IPLAN
32	MARQUES	RICKKER	ITS BRASIL
33	NASCIMENTO	EDSON	ITS BRASIL
34	SANTOS	GUSTAVO	ITS BRASIL
35	CAMPOS PEREIRA	MAURICIO	LIFE SERVIÇOS DE COMUNICAÇÃO MULTIMIDIA LTDA
36	GONZÁLEZ DELGADO	OSCAR OSMANY	MINISTERIO DE CULTURA DE CUBA
37	CILENTO FILHO	ORIPIDE	NIC.BR
38	JUSTO	RAFAEL DANTAS	NIC.BR
39	MOREIRAS	ANTONIO M.	NIC.BR
40	SZTOKBANT	EDUARDO	NIC.BR
41	GIL BELLO	DAYERLIN YEINNET	NIC.VE
42	JAROLIN OCAMPOS	JOSÉ	NIC.PY
43	RAMIREZ ALBA	JOSÉ FRANCISCO	OFICINA DE PLANIFICACION DEL SECTOR UNIVERSITARIO
44	FARFÁN TORRES	RONALD JOSÉ	OFICINA DE PLANIFICACIÓN DEL SECTOR UNIVERSITARIO
45	SANCHEZ	ANTONIO	OFICINA DE PLANIFICACIÓN DEL SECTOR UNIVERSITARIO
46	MISSAWA	RODRIGO	OI S/A
47	ROCHA ABREU	FABIANO	OI S/A
48	CUEVAS	FERNANDO	ORACLE CORP
49	ROJAS ASTIGARRAGA	SERGIO	PNUD - PARAGUAY SILVESTRE
50	CERON	JOÃO MARCELO	POP-RS/RNP - CERT-RS

51	OLIVEIRA PORTO	LUIS CARLOS	PRESIDÊNCIA DA REPÚBLICA
52	GUTIERREZ	DANIELA	PRIVATE
53	MORENO	WAGNER	PRODESP - GOVERNO DO ESTADO DE SÃO PAULO
54	SILVA	WALTER LUIZ DE ALMEIDA	PRODESP/GOVERNO DO ESTADO DE SÃO PAULO
55	PINZ	LUCAS	PROMON
56	TAKAHARA	JHULI	PROMON
57	KOPPER	LUIS	RACSA
58	SOLANO	LUIS CARLOS	RACSA
59	CAMARGO DE CAMPOS	DAVID ROBERT	REGISTRO.BR
60	TEDESCO	HORACIO	TELEFÓNICA DE ARGENTINA
61	ANDRADE	CARLOS	TELEFONICA DEL SUR
62	SALLES	ELIZABETH DE OLIVEIRA	TELEMAR NORTE LESTE - OI
63	BERMUDEZ	TATIANA	UNIVERSIDAD DE COSTA RICA
64	BONILLA LIZANO	RAMÓN GERARO	UNIVERSIDAD DE COSTA RICA
65	GOMEZ	JORGE	UNIVERSIDAD DE SAN CARLOS DE GUATEMALA
66	CATOTA ACOSTA	CLOTILDE RAQUEL	UNIVERSIDAD TECNOLOGICA EQUINOCCIAL
67	AGUIAR BEZERRA	JERÓNICMO	UNIVERSIDADE FEDERAL DE BAHIA
68	PIMENTA	LUCIANO	UNOTEL TELECOM S/A
69	JIPSION	ARMANDO	UTP / PANNET / NIC-PA
70	SAMBUCETI	ITALO	VTR BANDA ANCHA
71	DEL PINO	LAURA	ZONAMERICA

Table 3-1: List of participants, which filled the survey

PCs were available for the attendees. However, since we cannot ensure machines for all the attendees we encouraged people attending the tutorial to bring their own laptop for use with wireless LAN.

The requirements for participation in the workshop were:

- Laptop running on Windows XP or higher or Ubuntu 7.0 or higher.

- Knowledge in basic TCP/IP.

- Knowledge in Linux (will be an added advantage but not a requirement).

In all cases the attendees were technical people whose knowledge about IPv6 ranged from almost no knowledge at all, to having some experience of IPv6 deployment. Some had already performed IPv6 experiments or were planning some level of deployment at their institutions.

The participants represented a wide range of the ICT community. These people are precisely the ones who will collectively determine the rate of deployment of the latest Internet technologies in Latin America and Caribbean area, and therefore the impact will be that they will promote the upgrading of the networks to a state of the art that is comparable with EU countries.

In chapter section 6 more details about the attendees can be found based on their answers to the questionnaire.

3.3 Workshop programme

The agenda was agreed on after close collaboration with the local organizers from LACNIC, and tailored set up and configuration exercises were created for this workshop. The meeting agenda and the related material were submitted in advance, so that the local organizers could decide which topics should be prioritised and manage the logistics accordingly. As was requested by most of the participating organizations, the "hands-on" sessions took around 35% of the overall time of the training workshop. The programme of the workshop is presented in the following table:

Date	Time	Session	Modules of session
26/05/08	09:00	Session 1	Welcome and Introduction to IPv6
26/05/08	11:00	Session 2	Auto configuration, including DHCPv6 and Prefix Delegation
26/05/08	14:00	Session 3	Introduction to transition mechanisms
26/05/08	15:00	Session 3	DNS and BIND
26/05/08	16:00	Session 4	IPv6 in broadband technologies
26/05/08	17:00	Session 4	Routing and Multicast

Table 3-2: Workshop programme

3.4 Presentation material

The agenda was agreed on after close collaboration with the local organizers from LACNIC, and tailored set up and configuration exercises were created for this workshop.. The following material was presented:

Modules	Hands-on exercises	Presented by	Affiliation
Introduction to IPv6	Basic with PCs	Jordi Palet	Consulintel
Auto configuration, including DHCPv6 and Prefix Delegation		Francisco Obispo	CENIT
Introduction to transition mechanisms	Basic with PCs	Jordi Palet	Consulintel
DNS and BIND	Basic with PCs	Francisco Obispo	CENIT

IPv6 in broadband technologies		Jordi Palet	Consulintel
Multicast		Francisco Obispo	CENIT
Routing		Francisco Obispo	CENIT

Table 3-3: List of modules and hands-on exercises used

3.4.1 Modules

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

- **Introduction to IPv6**: This module explains why a new version for IP, IPv6, has been developed. A brief history of IPv6, and its motivation and benefits are given. Also Header Formats & Packet Size and IPv6 addressing issues were presented. Other topics briefly introduced were IP mobility, security and QoS.

- **Auto configuration, including DHCPv6 and Prefix Delegation**: This module describes new protocols associated with IPv6 Auto configuration: e.g. Neighbour Discovery Protocol, DHCPv6, Prefix Delegation, etc.

- **Introduction to transition mechanisms and coexistence**: This module explains different approaches to deploying 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).

- **DNS and BIND**: This module describes new Resource Records for IPv6 DNS, the availability of IPv6 in the root servers zone and CC-TLDs, the DNS usage in servers and clients, etc.

- **IPv6 in broadband technologies**: This module explains how IPv6 works in broadband technologies such as cable DOCSIS, ADSL, Ethernet, PLC, wireless (WiFi, WiMAX, 3G), etc.

- **IPv6 multicast**: This module describes the main characteristics of IPv6 multicast including multicast addressing.

- **IPv6 routing**: This module mainly describes the differences between IPv4 and IPv6 routing protocols for BGP4+.

3.4.2 Hands-on exercises

To help ensure the workshop attendees will be able to install IPv6 in their own environment after the course is over, a set of practical exercises has been designed, known as 'hands-on modules'. These exercises were performed on local PCs equipment.

Below is a brief description of the hands-on exercises that were performed:

- **Basics 1:** Exercises illustrate how to install IPv6 on several platforms, mainly Linux, Vista, and Windows XP operating systems. Use of link-local addresses, ping and traceroute. Configuration of static addresses.

- **Basics 2:** In this hands-on exercise, IPv6 protocol is analysed in depth: Neighbour Discovery, Auto configuration, etc. Management of static routes and routing table are shown.

For the hands-on exercises that used attendee's hosts, a WLAN network was used that connected those all together in the same LAN segment permitting IPv6 communication among attendees.

Global Crossing provided the Internet connectivity, via a link to RNP, with an available bandwidth of 10 Mbps.

3.5 Photographs taken at the event

Figure 3-1: Attendees to the workshop

Figure 3-2: Attendees to the workshop

Figure 3-3: Attendees to the workshop

4. ADDITIONAL IPv6 ACTIVITIES

Besides the IPv6 Workshop, 6DEPLOY also actively participate, through Consulintel and LACNIC, in the preparation and run of others activities related to IPv6 during LACNIC XI.

4.1 Sixth Latin American IPv6 Forum - FLIP-6 meeting

The aim of the Latin American IPv6 Forum is to promote the adoption of the IPv6 Protocol within the region of Latin America and the Caribbean, as well as to share experiences regarding the implementation within our region of services and applications based on IPv6.

Experiences will be exchanged both in relation to commercial applications as well as academic applications, including the development of projects for implementing IPv6 in the future.

This meeting is completely open. The audience of this forum is extremely broad, and it encompasses professionals from academic and commercial sectors, university networks, Internet Service Providers, NAP operators, ccTLDs and professionals of the telecommunications industry in general.

The agenda covered during 29th and 30th May 2008 included the following presentations:

- "IPv6: a new protocol, a new routing table", Iljitsch van Beijnum.

- "IPv6 Implementation Case Study at Sao Paulo / Brazil", Eduardo Ascenco (Reis).

- "IPv6 Implementation Case Study at Comsat Venezuela", Alejandro Acosta (Comsat Venezuela).

- "IPv6 Routing System Update" Roque Gagliano (LACNIC) for Gert Doering (SpaceNet).

- "IPv6 deployment at a great scale in an ISP" Alain Durand (Comcast).

- "IPv6 Experiment Introduction", Ricardo Patara (LACNIC).

- "IPv6 at the University Network in Argentina", Guillermo Cicileo (RIU).

- "Costa Rica: IPv6 deployment in the country", Jordi Palet Martínez (Consulintel).

- "EU plan towards IPv6", Jordi Palet Martínez (Consulintel).

- "IPv4/IPv6 coexistance/transition and NAT-PT requirements", Iljitsch van Beijnum.

- "IPv6 Task Force of the region – Panel", several presenters from national Task

Forces.

- Open Mic - Discussion IPv6 Experiment.

For more information http://www.lacnic.net/en/eventos/lacnicxi/flip6.html

4.2 Latin America and the Caribbean IPv6 Task Force meeting

The main objective of the IPv6 Task Force for Latin America and the Caribbean is to promote de adoption of IPv6 within the region. In order to do so, the "LAC IPv6 TF" coordinates the cooperation among the different parties involved in the adoption of IPv6 in Latin America and the Caribbean; it also promotes different activities aimed at informing and educating on IPv6 and related technologies.

This meeting is completely open to all those who wish to participate.

For more information on the LAC IPv6 TF visit http://www.lac.ipv6tf.org

4.3 IPv6 Experiment

During the entire week of the LACNIC XI event there was native IPv6 connectivity.

In addition to the usual double stack network (wireless networks with SSIDs: lacnic and lacnic-a), during that week there was an exclusive wireless IPv6 network (SSID: lacnic-v6only) with no translation mechanisms.

Participants were able to connect their devices to any of the three networks indistinctly according their preference, but they were encouraged you to try to connect to the exclusive IPv6 network as this allowed:

- Verify attendees' computer is properly configured for IPv6 networks.
- Verify the IPv6 configuration of your supporting equipment (email servers, web, jabber, etc.).
- Receive a prize during the IPv6 Experiment.

In addition to that, during the IPv6 Task Force for Latin America and the Caribbean morning session held on Friday 30th May, the two wireless IPv4 networks (lacnic and lacnic-a) ceased being broadcast, so that connectivity was only be possible through the exclusive IPv6 network. This is the IPv6 Experiment.

Similar experiments have already been conducted at other fora such as NANOG, IETF, APRICOT, ARIN, RIPE and MENOG.

The experiment was scheduled on 30th May 2008 as follows:

- 9:00 am - IPv6 Experiment Introduction.

- 9:15 / 9:45 am - The IPv4 network was switched off and only native IPv6 connections, without translation mechanism, will be available.

- 9:45 / 10:30 am - Only native IPv6 connections with NAT-PT translation mechanism are available.

- 10:40 am - End of the experiment and reception of comments from the audience.

For more information http://www.lacnic.net/en/eventos/lacnicxi/experimentoIPv6.html

Figure 4-1: LACNIC IPv6 Experiment

5. 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 plan, 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 of these.

Attendees showed interest in further workshops.

All requests were attended to and forwarded to the project that would provide support for all needs related to IPv6.

6. ANALYSIS OF THE FEEDBACK QUESTIONNAIRES

A questionnaire has been specially designed for the purpose of getting feedback from the participants regarding the suitability of the course material, and the presenters´ ability to convey information, and the relevance of the information to the expectations of the attendees.

Personal information was not mandatory, so as to allow for anonymous responses.

Each participant was first asked to indicate:

- his/her organization and job responsibilities, and

- his/her plans for IPv6 deployment in his/her organization.

Then, for each theoretical presentation and "hands-on" session, each participant was requested to assess "usefulness", "quality of presentation", "familiarity with the topic", "quality of the course documentation", "general organization", etc.

6.1 General questions related to participants and IPv6

About the participants		
Around 100 participants were present, 60 questionnaires were returned		
Employment sector	Government	15
	University or other higher education	7
	Schools or further education	1
	Research	1
	Health	3
	Commercial	16
	Other (please specify)	Several (15)*
Job function	Government Advisor	1
	Senior Manager	5
	IT Manager	8
	Systems Administrator	10
	Network Administrator	30
	Researcher / Postgraduate	2
	Undergraduate	1
	Other (please specify)	Several (3)*
Usage of IPv6		
Do you use IPv6 yourself?	Yes	11
	No	40
Does your organization use IPv6?	Yes	6
	No, but planned in this year	2
	No, but planned in the next year	21
	No, but planned in the longer term	15

	No, and no plans as yet	8

* See the graphics in chapter 6 for more information

Table 6-1: General questions related to participants and IPv6

6.2 Questions regarding the workshop

About the Workshop				
Usefulness of the topic	Very useful	Useful	Slightly useful	Not useful
Session 1	31	20	0	0
Session 2	25	24	2	0
Session 3	28	21	1	0
Session 4	27	21	2	0
Quality of the presentation	Excellent	Good	Average	Poor
Session 1	33	18	1	0
Session 2	22	26	3	0
Session 3	29	21	1	0
Session 4	26	22	3	0
Familiarity with the topic?	None	Some	Most	All
Session 1	5	21	17	7
Session 2	6	19	24	2
Session 3	7	21	17	4
Session 4	7	21	18	3
Quality of the course documentation	Excellent	Good	Average	Poor
	12	29	9	0
General workshop organization	Excellent	Good	Average	Poor
	26	22	3	0
Recommend to your colleagues?	yes	no		
	47	2		

Table 6-2: Questions regarding the workshop

6.3 Results graphics

Following are some graphics that represent the above results in a more friendly way, so as to ease their interpretation.
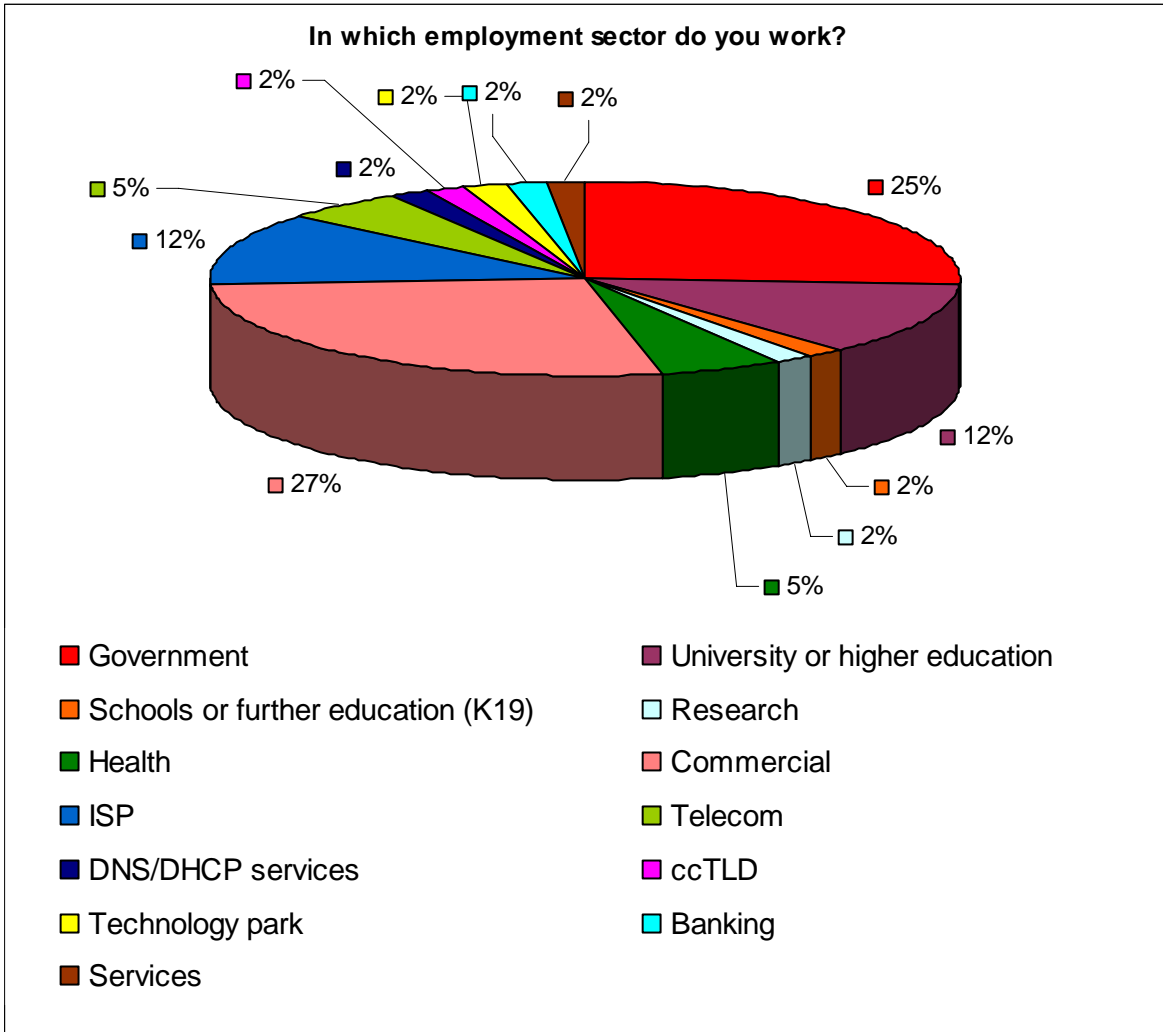
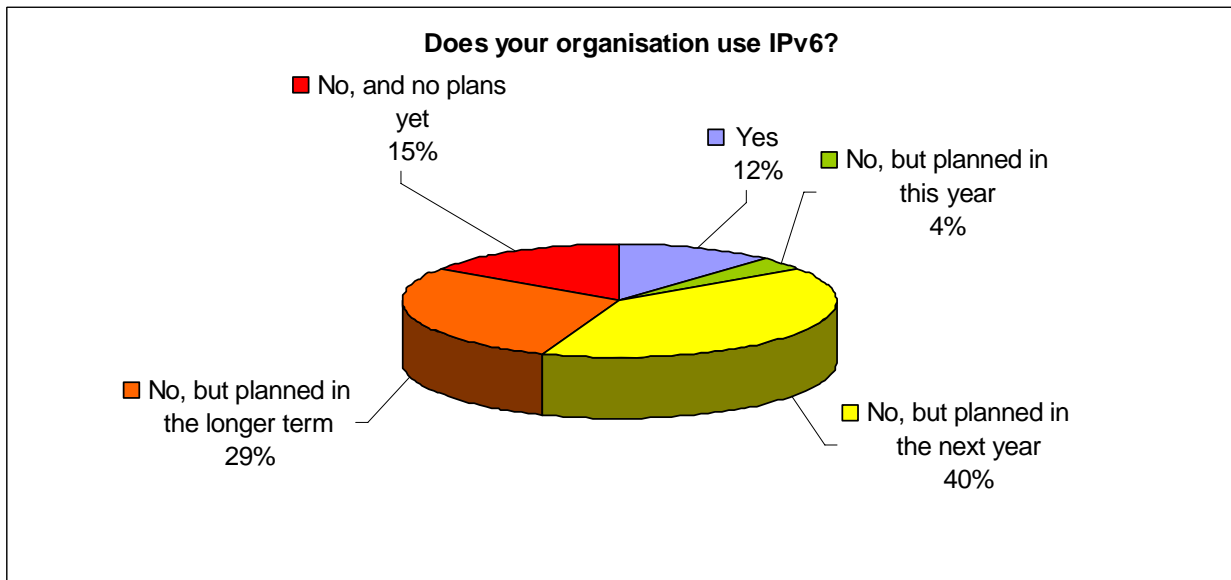**Figure 6-1: In which employment sector do you work?**

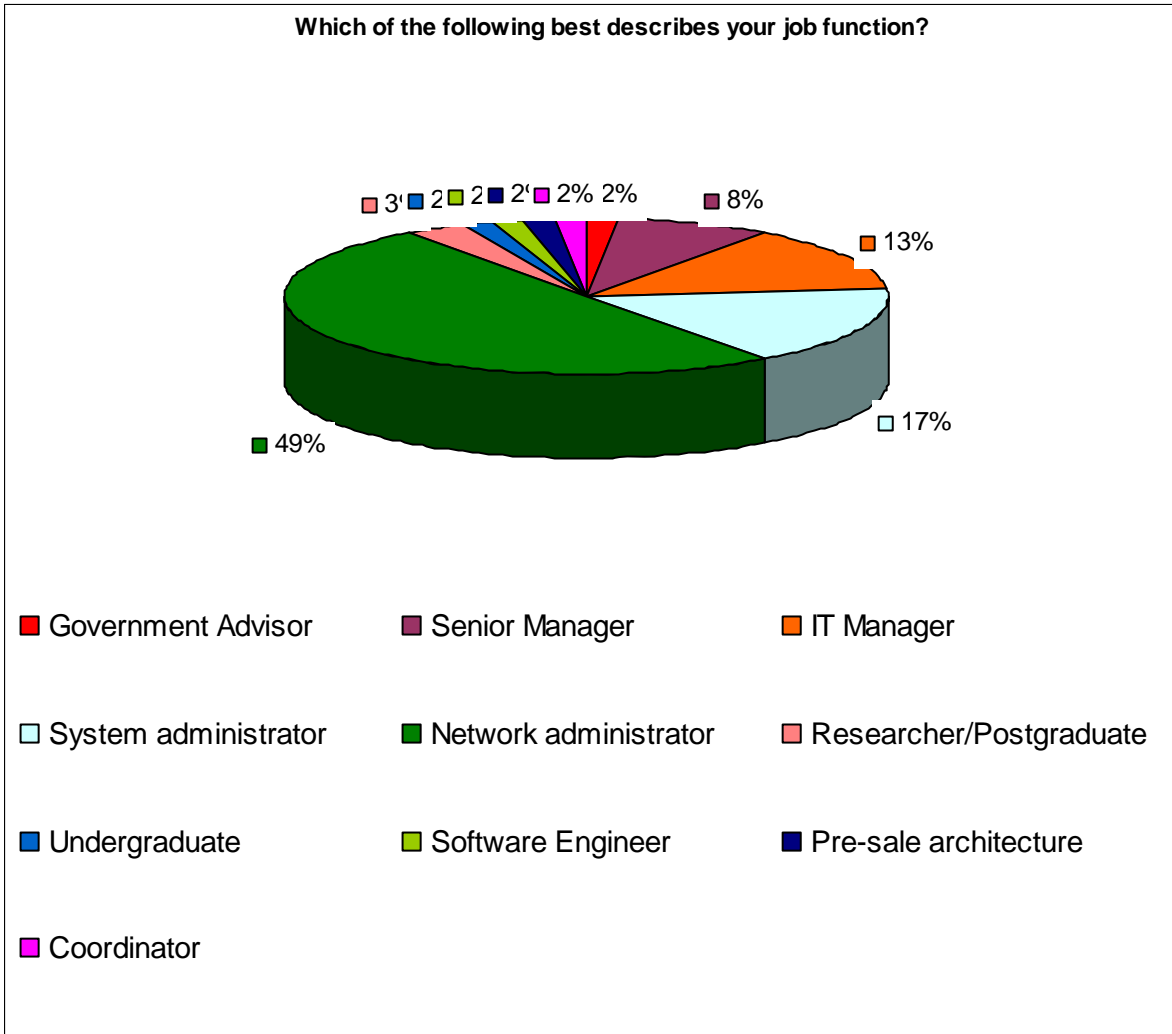**Figure 6-2: Does your organization use IPv6?**
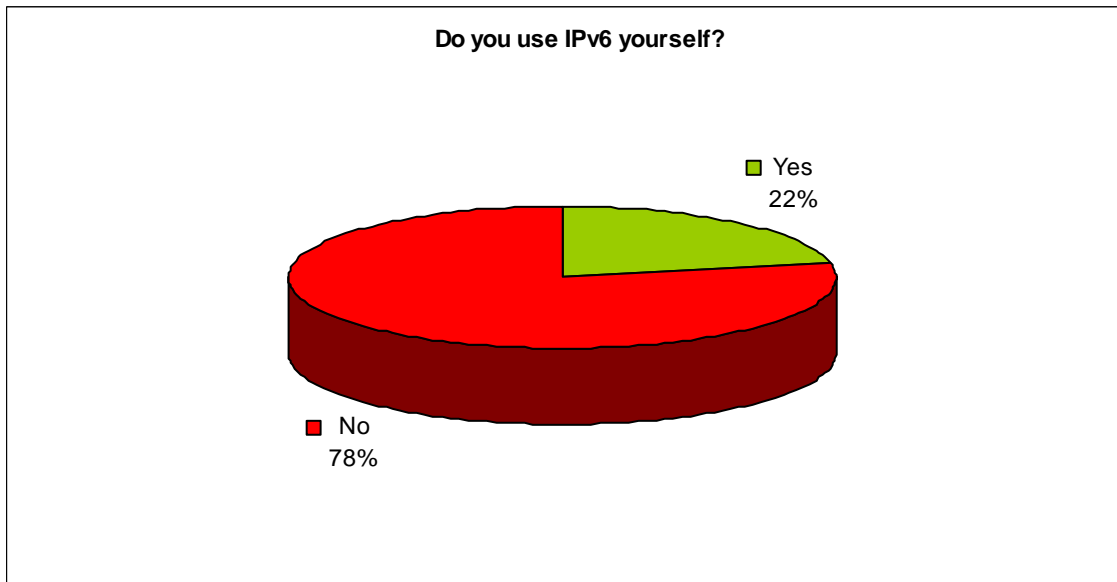
Which of the following best describes your job function?

Legend:
- Government Advisor
- Senior Manager
- IT Manager
- System administrator
- Network administrator
- Researcher/Postgraduate
- Undergraduate
- Software Engineer
- Pre-sale architecture
- Coordinator

Figure 6-3: Which of the following best describes your job function?

Do you use IPv6 yourself?

- Yes 22%
- No 78%

Figure 6-4: Do you use IPv6 yourself?

How useful did you find the presentations?
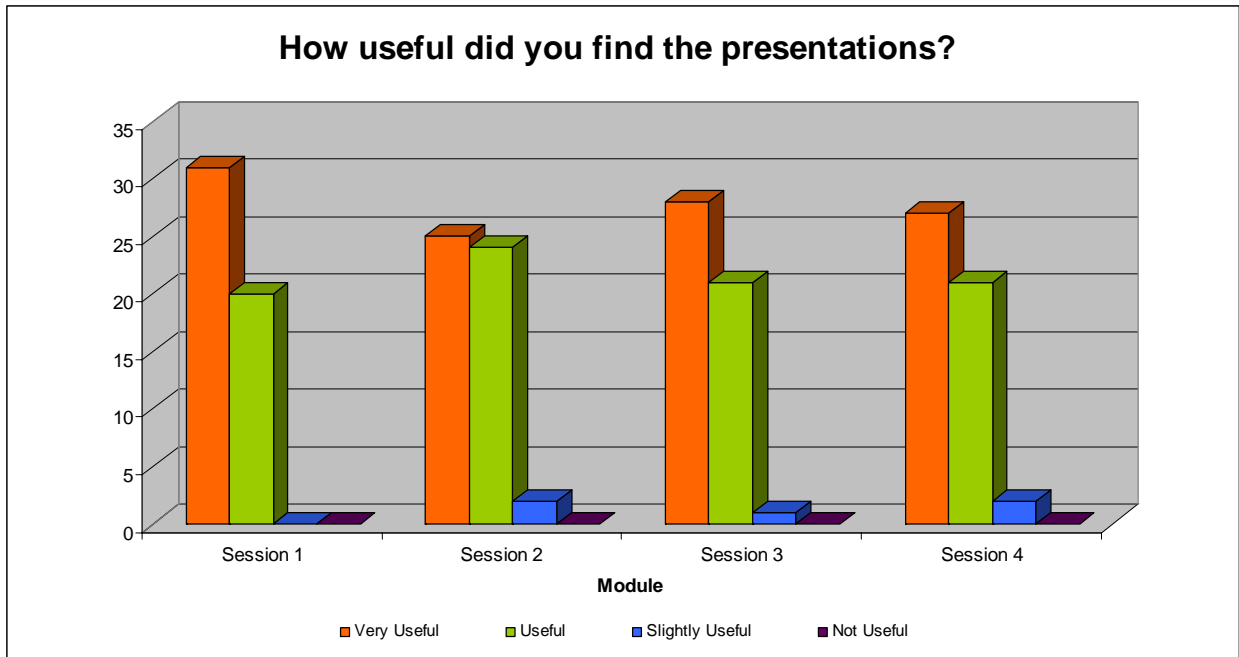
Figure 6-5: How useful did you find the presentations?
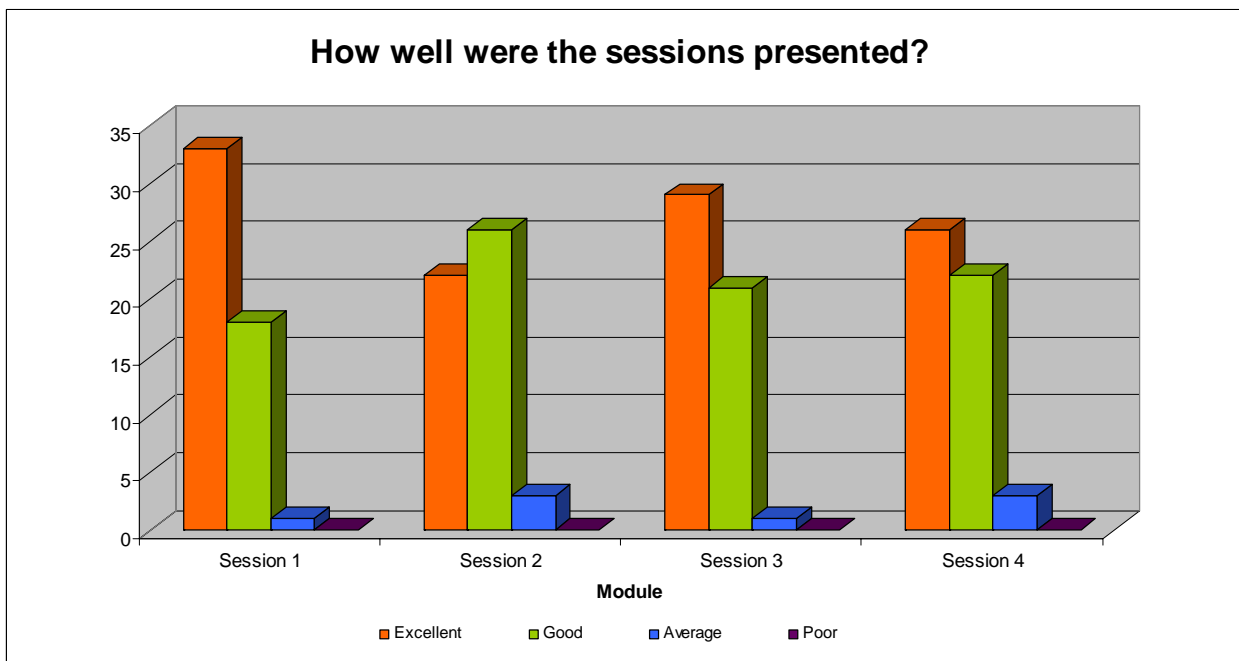
How well were the sessions presented?

Figure 6-6: How well were the sessions presented?
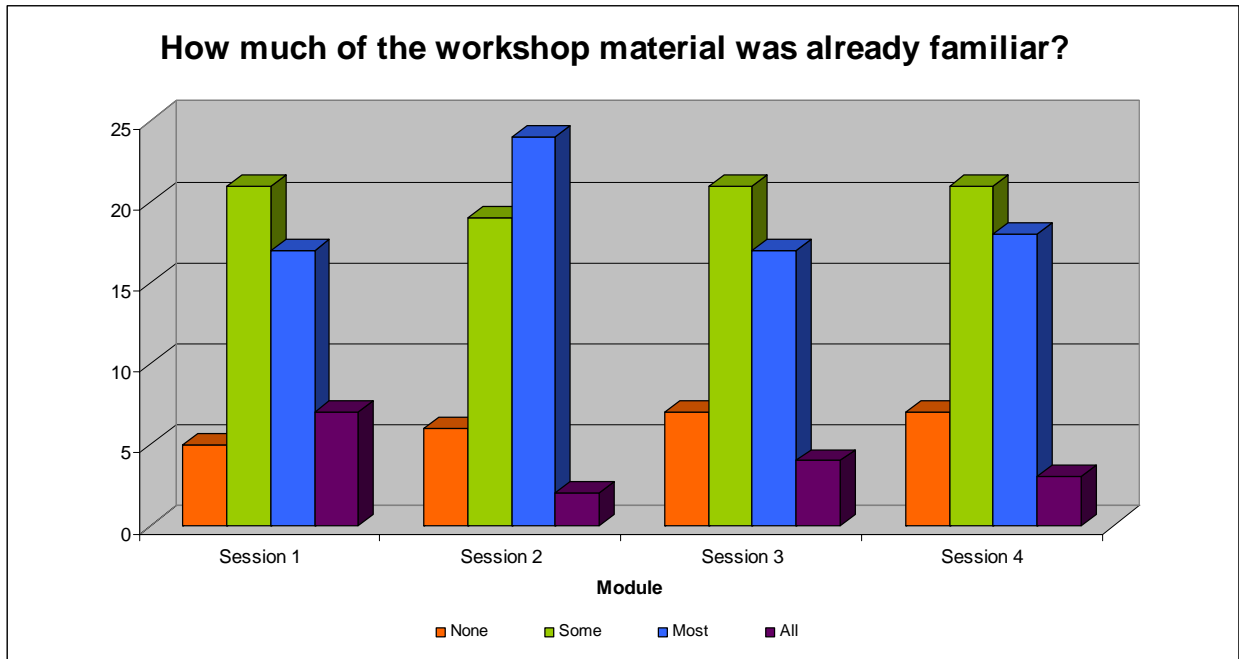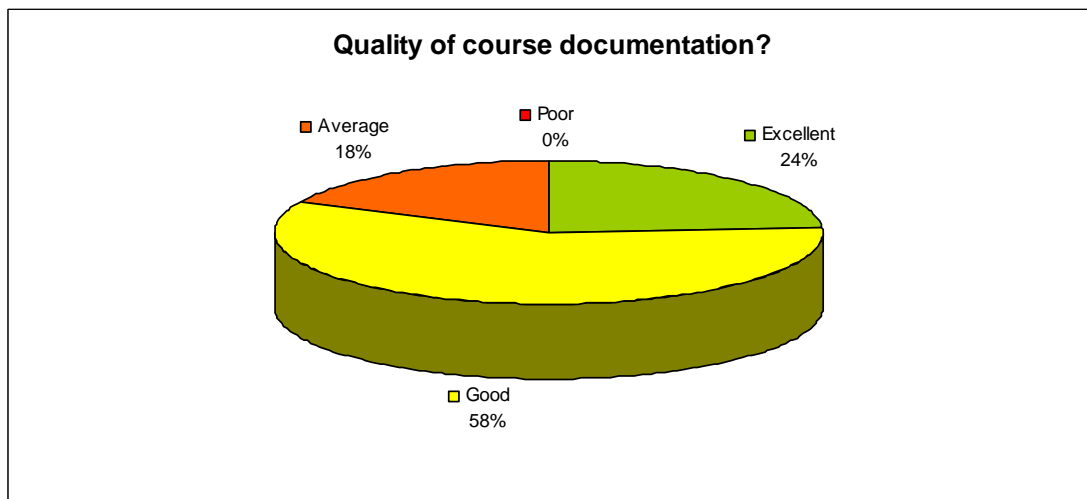
How much of the workshop material was already familiar?

Figure 6-7: How much of the workshop material was already familiar?

Quality of course documentation?

Figure 6-8: Quality of course documentation?

General organization of the workshop?

Poor
0%

Average
6%

Good
43%

Excellent
51%
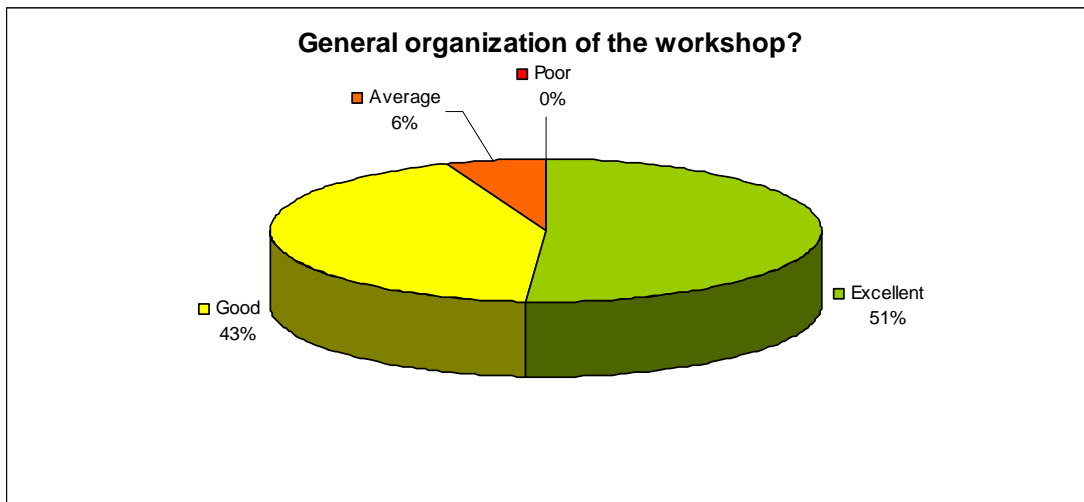
Figure 6-9: General organization of the workshop?

Would you recommend the workshop to your colleagues?
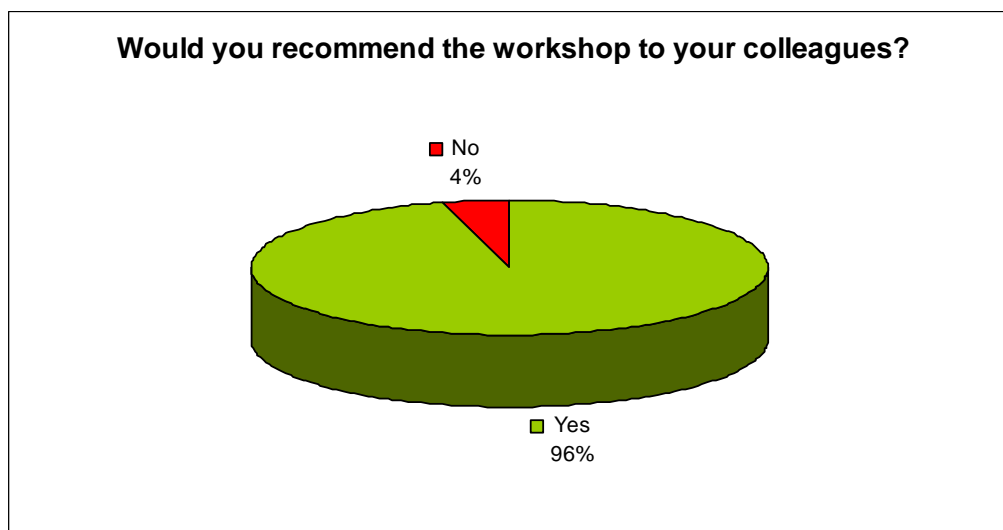
No
4%

Yes
96%

Figure 6-10: Would you recommend the workshop to your colleagues?

6.4 Participants comments

It should be noted that the participants had different technical backgrounds. For example, some were network engineers (and therefore more interested in routing protocols and troubleshooting practices) while others were system administrators (and therefore more interested in applications and monitoring tools). Depending upon their background, some participants would have preferred to spend more time on Management, Applications, "hands-on", or to have a "hands-on" session related to security issues. It is also worth mentioning that a few attendees remarked that the sessions where too short, and that they would have been happy to work much later in the evening for more "hands-on" exercises.

Within the questionnaire there were three open questions where the trainees could give their feedback on the workshop. Below are almost all of the responses. Note that some

are repeated (number put between parentheses).

Here are some comments provided by the trainees:

== Begin of the excerpts

*What topics would you have liked to **hear more about**?:*

- *(1)   I would like to hear more about IPv6 only NAT PT translation to be able to connect old v4 boxes over v6 only network*

- *(1)   Traducción IPv4/IPv6*

- *(1)   IPv6 configuration, Teredo*

- *(1)   Configuración práctica de redes IPv6, con mayor tiempo para laboratorio*

- *(1)   Configuración de servicios con IPv6 como servicios web ejem. Apache, servicios de correo como sendmail, etc.*

- *(1)   Implementación de IPv6*

- *(1)   Movilidad IPv6*

- *(2)   More experiences in implementation, carriers or ISP examples, threats, security (attacks), problems, etc.*

- *(1)   IXP with IPv6 and multicast*

- *(2)   Mecanismos de transiçao IPv6*

- *(1)   Problematicas de migraçao*

- *(1)   Parte práctica IPv6*

- *(1)   IPv6 routing*

- *(3)   IPv6 BGP*

- *(1)   Taller de IPv6 BGP*

- *(1)   DNSSEC with IPv6*

- *(1)   Security*

- *(1)   DNS en IPv6*

*What topics would you have liked to **hear less about**?*

- *(1)   BGP over IPv6*

- *(1)   No, everything is OK*

- *(1)   None*

- *(1)   Tecnicas de roteamento*

- *(1)   Configuraciones*

- *(1)   DNS BIND*

- *(1)   DNS and DHCP*

- *(1)   No problem with the topics*

*Any **other comments**:*

- *(1)   Excelente taller*

- *(1)   Felicitaciones por la pasión y compromiso del señor Palet*

- *(1)   Nåo, obrigado*

- *(1)   Seria bueno que el taller fuese más de un día pues el tema es muy amplio e interesante*

- *(1)   I missed a download link for the presentation, because I seaten a bit far from projector and would be nice have the presentation in my laptop for better view*

- *(1)   I would like receive the presentations*

- *(1)   The documentation could be in English (I don't speak Spanish)*

End of the excerpts ==

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.

This first official 6DEPLOY workshop took place in Salvador de Bahia (Brazil) during 26th May 2008, within the LACNIC XI meeting scheduled in 26th to 30th May 2008.

Consulintel led this workshop with strong cooperation of LACNIC. Thanks to previous projects and training activities, most of the IPv6 education material needed to start the 6DEPLOY workshop training was available from the very beginning.

The set of dissemination material included most of the issues of Internet deployment and evolution, especially IPv4-IPv6 transition/co-existence strategies, DNS, Auto configuration, Routing and Applications.

71 network engineers, system administrators, and regulators participated in the event. The topics presented were selected according to LACNIC and the participants' requirements.

According to the evaluation forms and the comments from the participants at the workshop, it is clear that there is significant interest in the region for the IPv6 technology. The participants expressed positive comments on the workshop's usefulness and organization. They also requested that 6DEPLOY organize more workshops in the region with more specific technical subjects.

Furthermore, some of the attendees expressed interest in participating in any subsequent "Training the Trainers" courses.

Some new ideas have already been discussed to improve the existing material, such as adding more "applications-oriented" elements to the labs, which might be of interest for IPv6 deployments.

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 regarding the reached

dissemination of IPv6 in Brazil and by extension in Latin American and Caribbean area, and it will helps 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://6diss.6deploy.org/publications/deliverables/hands-on.pdf

How-to organize an IPv6 workshop:

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

Training the trainers workshop: http://6diss.6deploy.org/workshops/ttt/

e-learning package: http://6diss.6deploy.org/publications/multimedia/e-learning.iso

e-learning on-line: http://6diss.6deploy.org/e-learning/