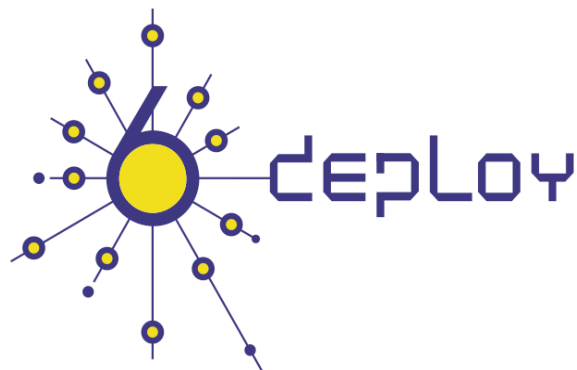




e-infrastructure



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Abstract:

This deliverable reports on four workshops that were held in Latin America. Specifically, this deliverable reports on workshops that took place in Santiago de Chile (Chile), Guayaquil (Ecuador), Bogota and Medellin (Colombia). 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, LAC, Training, Testbeds, Modules, 6DISS, 6DEPLOY, Hands-on exercises

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

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v0.1	02/09/2010	Document creation	Alvaro Vives (Consulintel)
v0.2	07/10/2010	Added Colombia workshops information	Alvaro Vives (Consulintel)
v1.0	9/10/2010	Final review and editing	A. Higa, M. 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 four workshops that were held in the LAC region. Specifically, this deliverable reports on workshops that took place in Santiago de Chile (Chile), Guayaquil (Ecuador), Bogota and Medellin (Colombia). The following workshop details are described in this report: a) the workshop attendees and their affiliations, b) the programme outline, c) the material presented, d) an analysis of the feedback questionnaires from the participants, and e) 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 organisations in International Cooperation Partner Countries, including countries in Africa, Asia, and Latin America, by involving organisations 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:

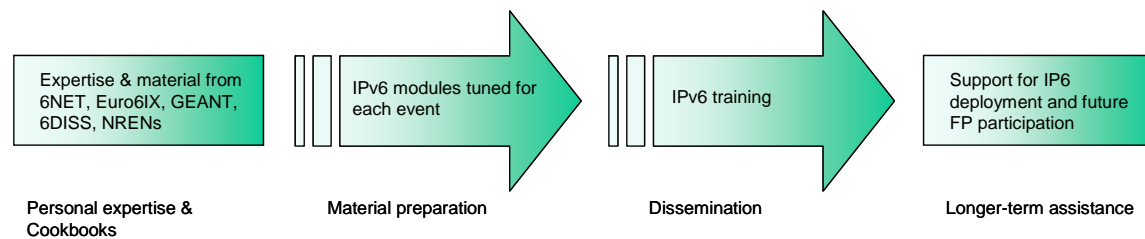


Figure 1-1: 6DEPLOY methodology (diagrammatically)

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 four workshops that were held in Latin America. Specifically, this deliverable reports on workshops that took place in Santiago de Chile (Chile),

Guayaquil (Ecuador), Bogota and Medellin (Colombia).

Chapter 2 of this document explains the general motivation for running IPv6 workshops, and chapters 3, 4, 5 and 6 describe the specific details of each workshop, in terms of the attendees, the modules that were presented, the “hands-on” exercises (if appropriate), and an analysis of the feedback questionnaires from the participants. Chapter 7 identifies opportunities for further collaboration in the region and follow up actions, and Chapter 8 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 organisations 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 organisation, the sponsors, etc.

3. THE 6DEPLOY WORKSHOP IN SANTIAGO DE CHILE (CHILE)

This IPv6 Workshop took place in Santiago de Chile, Chile, on August 12th - 13th 2010. 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=20100812_santiago_chile

3.1 Overview

Individuals present at the workshop included Jordi Palet, from Consulintel representing 6DEPLOY.

Specific IPv6 material were presented, including an introduction to basic IPv6, concepts on the transition and coexistence of IPv4 and IPv6, 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.

3.2 Attendees

Below is a list of people that attended the first day session:

No.	Name	Surname	Affiliation
1	Diego	Vivallo	entel
2	Andrés	Améstica	claro
3	Carlos	Marchant	Entel
4	Marcos	Alcayaga	Entel
5	Pedro	Sepúlveda	movistar
6	Freddy	D'agostino	Entel
7	Andrés	Mendive	Entel
8	Alejandro	Leal	Entel
9	Cristián	Donoso	Entel
10	Francisco	Briceño	Entel
11	Marcelo	Muñoz	movistar
12	Álvaro	Pineda	movistar
13	Sebastián	Escobar	movistar
14	Andrés	Muñoz	duam
15	Mario	Cornejo	NICLabs
16	Pablo	Sepúlveda	NICLabs
17	Sebastián	Uribe	NICLabs
18	Óscar	Ponce	VTR
19	Marco	Yáñez	TELMEX
20	Carlos	Carrasco	TELMEX

21	Rodrigo	Valenzuela	TELMEX
22	Christian	Carter	TELMEX
23	Claudio	Galaz	TELMEX
24	Carlos	Rogat	TELMEX
25	Mónica	Fuentes	ENTEL PCS
26	Rodrigo	Granzotto	Movistar
27	Antonio	Cansado	NICLabs
28	Mauricio	Jorquera	TELMEX
29	Luis	Ortiz	ENTEL PCS
30	Darwin	Valderas	ENTEL PCS

Table 3-1: Santiago de Chile Workshop list of participants

The participants represented a wide range of the ICT community. They were technical people whose knowledge about IPv6 ranged from almost no knowledge at all 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 on 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 prioritised and so manage the logistics accordingly. The programme of the workshop is presented in the following table:

Date	Time	Title of session
12/8/2009	9:00	IPv6 Basics
13/8/2009	9:00	IPv6 Startup

Table 3-2: Santiago de Chile Workshop programme

3.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
IPv6 Basics	Jordi Palet	Consulintel
IPv6 Startup	Jordi Palet	Consulintel

Table 3-3: Santiago de Chile Workshop list of modules used

3.4.1 Modules

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

- **IPv6 Basics:** This module explains why a new version for IP, IPv6, has been developed. A brief history of IPv6, its motivation and benefits are given. IPv6 packet header, extensions headers and 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. Transition concepts are introduced.
- **IPv6 Startup:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts. In addition, some practice with basic transitions mechanisms using hosts.

3.5 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 organisation and job responsibilities, and
- his/her plans for IPv6 deployment in his/her organisation.

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 organisation", etc.

3.5.1 General questions related to participants and IPv6

About the participants		
30 participants were present, 19 questionnaires were returned		
Employment sector	Government	3
	University or other higher education	3
	Schools or further education	0
	Research	6
	Health	0
	Commercial	11
	Other (please specify)	(3)*
Job function	Government Advisor	1
	Senior Manager	1
	IT Manager	5
	Systems Administrator	2

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	Network Administrator	13	
	Researcher / Postgraduate	3	
	Undergraduate	0	
	Other (please specify)	(2)*	
Usage of IPv6			
Do you use IPv6 yourself?	Yes	7	
	No	11	
Does your organisation use IPv6?	Yes	9	
	No, but planned in this year	7	
	No, but planned in the next year	0	
	No, but planned in the longer term	2	
	No, and no plans as yet	1	

* See the graphics section for more information

Table 3-4: General questions related to participants and IPv6

3.5.2 Questions regarding the workshop

About the Workshop				
Usefulness of the topic	Very useful	Useful	Slightly useful	Not useful
Presentation 1 - IPv6 Introduction	14	2	1	0
Presentation 2 - IPv6 Transition	15	1	1	0
Quality of the presentation	Excellent	Good	Average	Poor
Presentation 1 - IPv6 Introduction	15	2	0	0
Presentation 2 - IPv6 Transition	14	1	1	0
Familiarity with the topic?	None	Some	Most	All
Presentation 1 - IPv6 Introduction	3	5	10	0
Presentation 2 - IPv6 Transition	4	6	8	0
Quality of the course documentation	Excellent	Good	Average	Poor
	10	7	1	0
General workshop organisation	Excellent	Good	Average	Poor
	8	9	1	0
Recommend to your colleagues?	yes	no		
	18	0		

Table 3-5: Questions regarding the workshop

3.5.3 Results graphics

Following are some graphics that represent the above results in a more friendly way, so as to ease their interpretation.

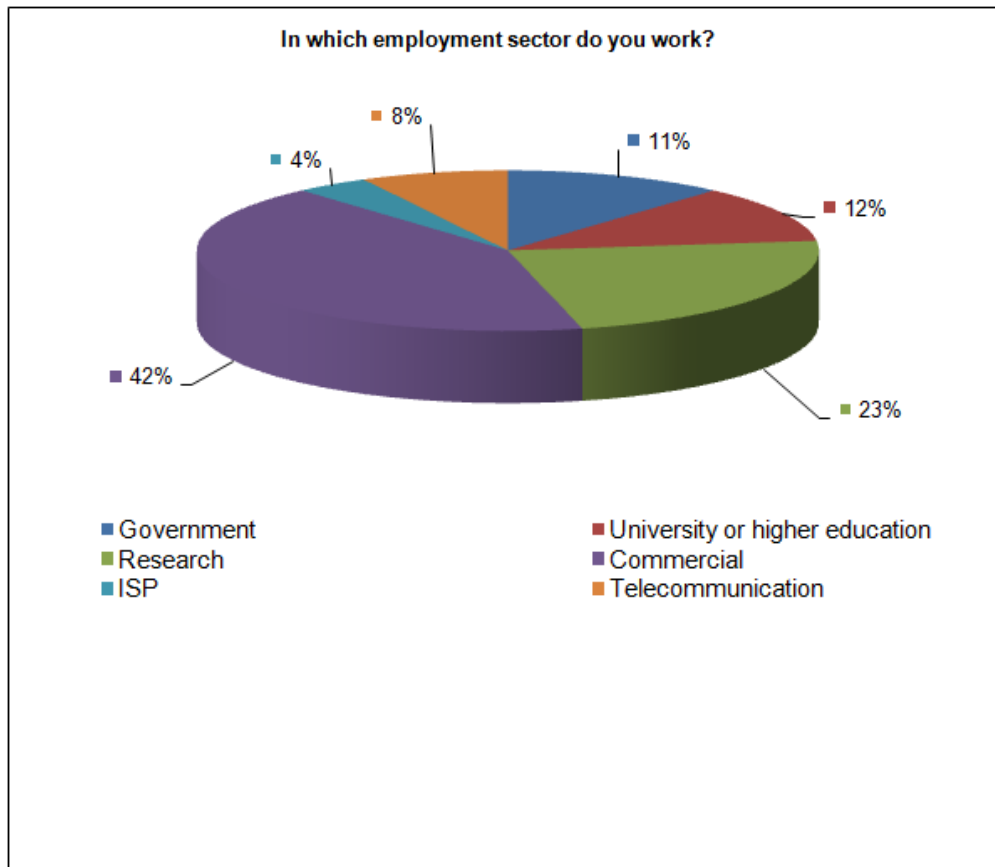


Figure 3-1: In which employment sector do you work?

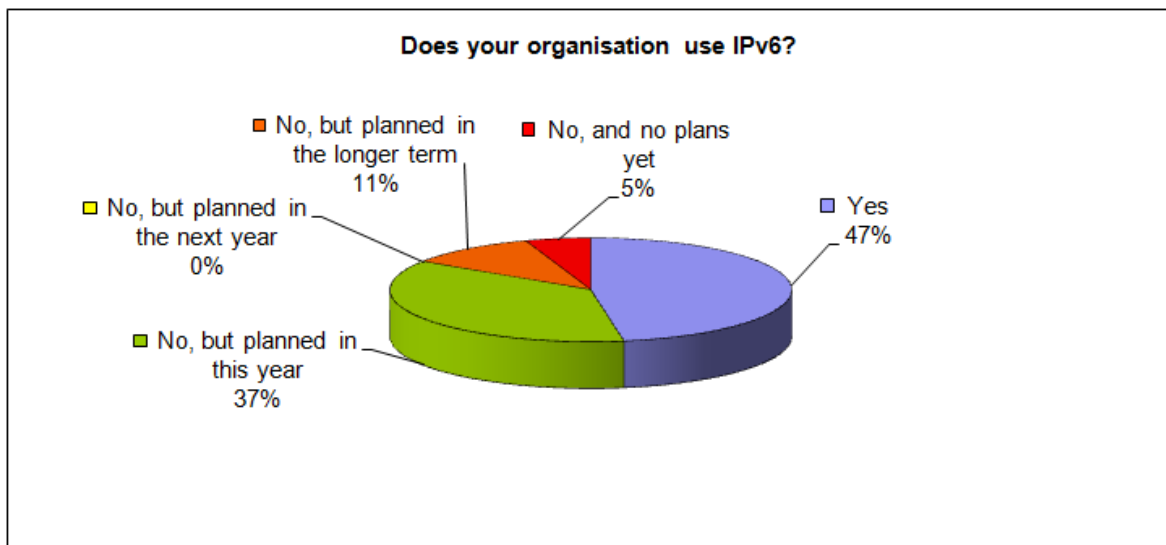


Figure 3-2: Does your organisation use IPv6?

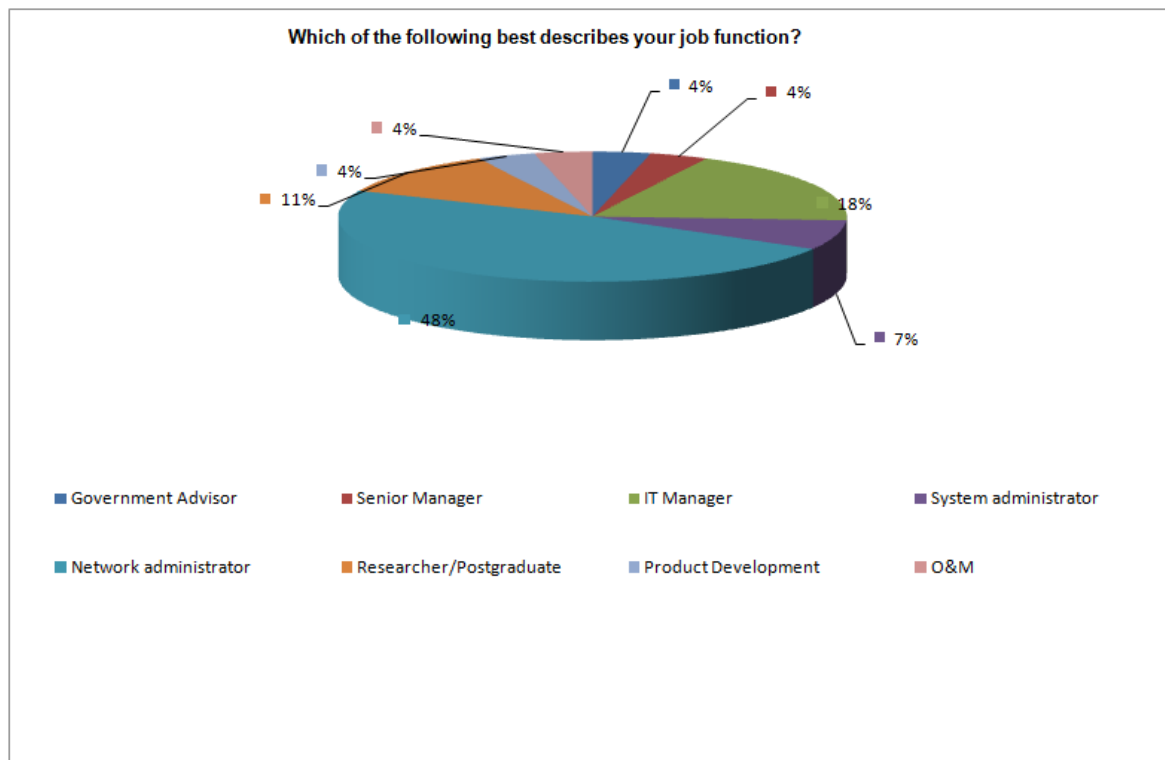


Figure 3-3: Which of the following best describes your job function?

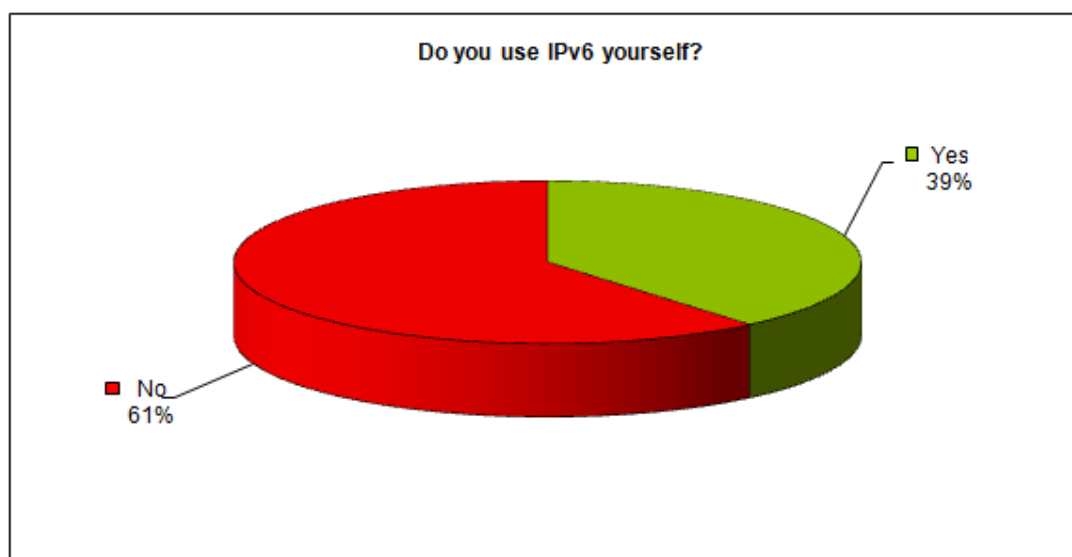


Figure 3-4: Do you use IPv6 yourself?

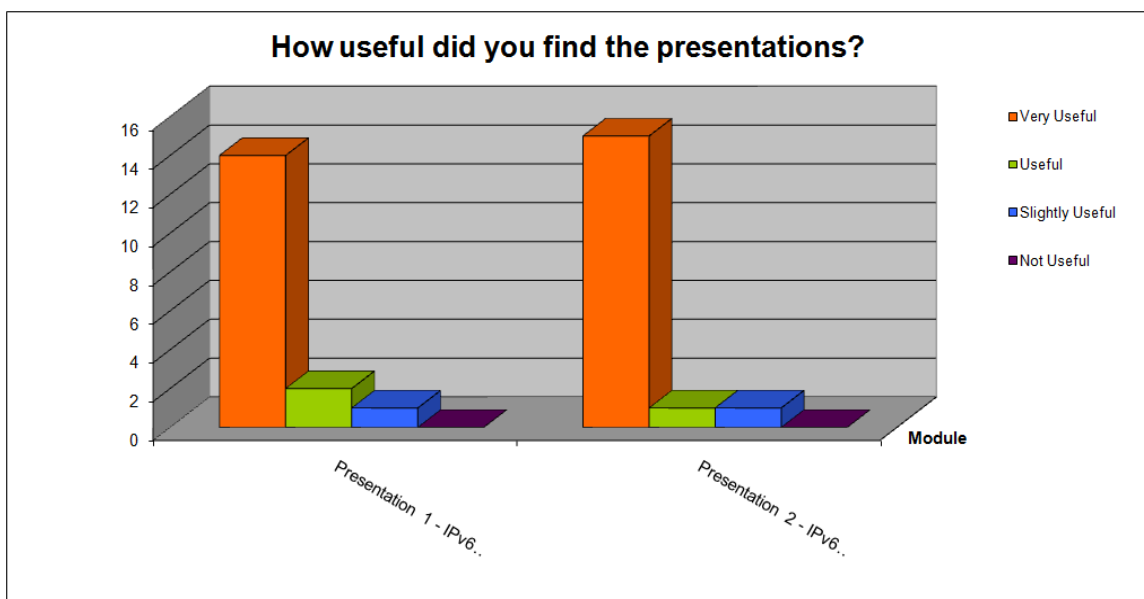


Figure 3-5: How useful did you find the presentations?

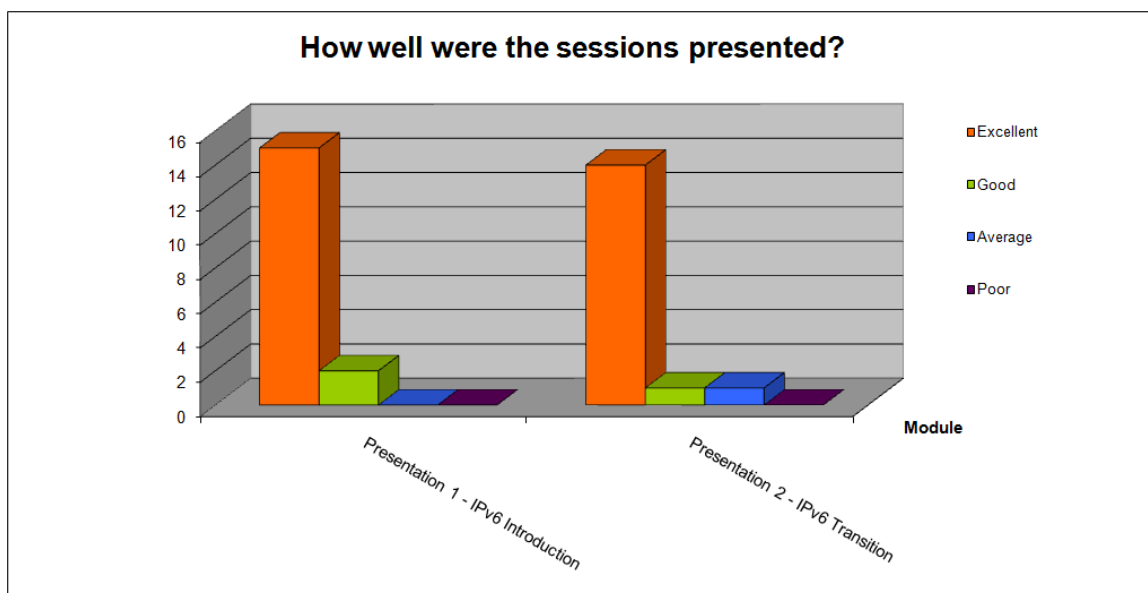


Figure 3-6: How well were the sessions presented?

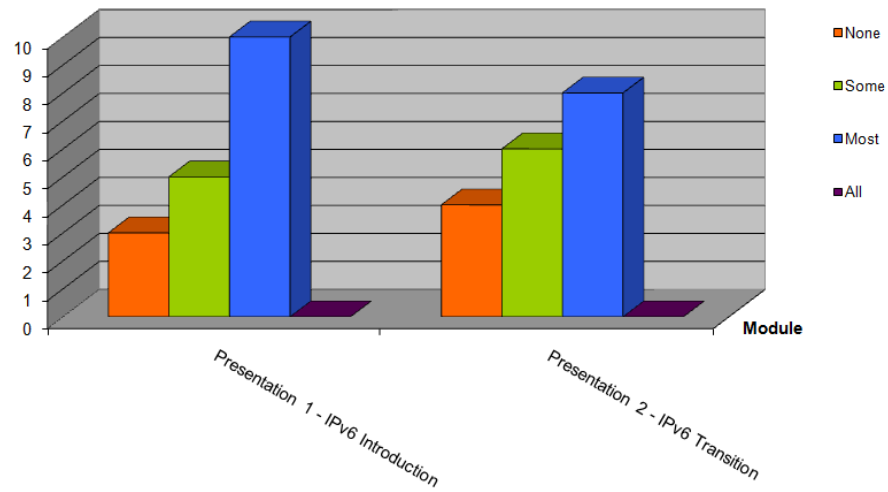
How much of the workshop material was already familiar?

Figure 3-7: How much of the workshop material was already familiar?

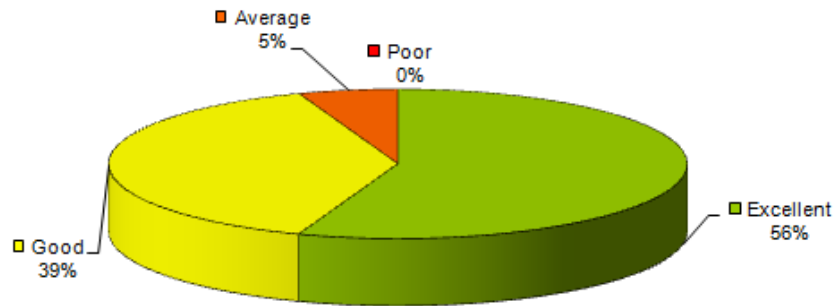
Quality of course documentation?

Figure 3-8: Quality of course documentation?

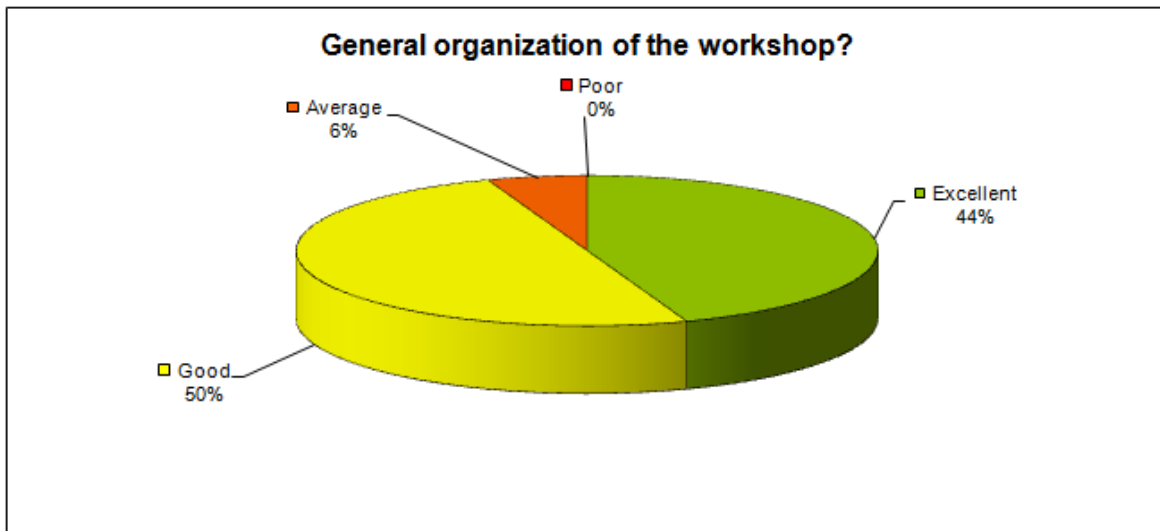


Figure 3-9: General organization of the workshop?

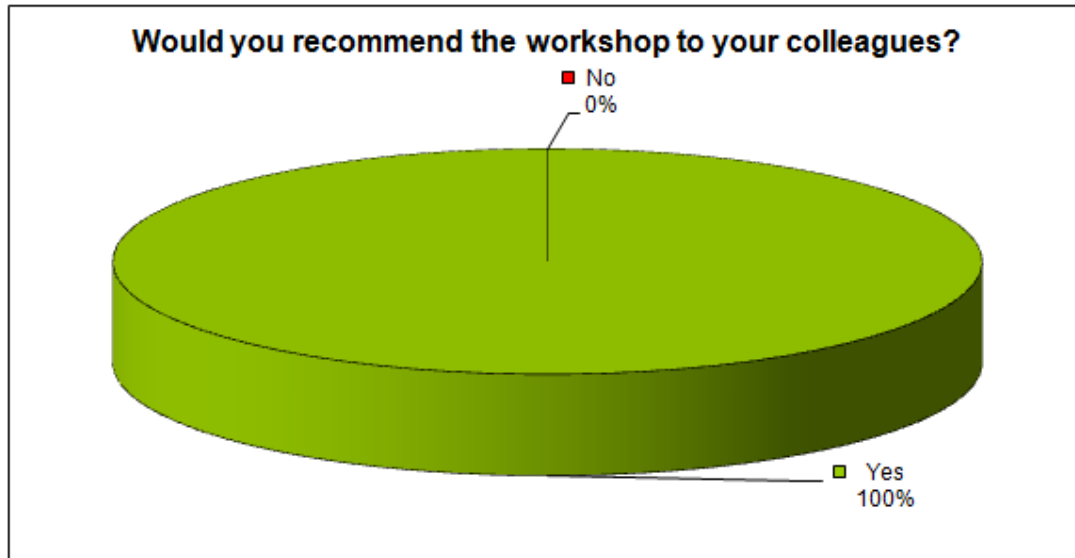


Figure 3-10: Would you recommend the workshop to your colleagues?

3.5.4 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.

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**?:*

- (2) *Tunnelling configuration.*
- (2) *Hardware/Routers configuration.*
- (2) *Transition.*
- (1) *IPv6 domotic devices.*
- (1) *Security in IPv6 -- how should I set up my firewall safely.*
- (1) *Presentation and practice focused on details for ISPs.*
- (1) *Training Trial Test Services Evolution.*
- (1) *Planning of IPv6 implementation.*
- (1) *More practice please.*
- (1) *IPv6 over docsis.*
- (1) *Examples of scenarios in common with IPV4 and IPV6, i.e, what is meant by migration.*

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

- (2) *History of IPv6.*

*Any **other comments**:*

- (1) *Great workshop. Really enjoyed all the tips exposed by Jordi Palet..*
- (1) *Very good workshop, A lot of things, I think it will be better more days, for more information.*
- (1) *Thanks!*
- (1) *Congratulations, this is an excellent presentation.*
- (1) *Very good workshop, presenter maintains you active, not bored, amazing...thanks.*
- (1) *Would be nice to include a small lab with the workshop.*
- (1) *It was a very good presentation, Jordi Palet has high knowledge about this topic (IPv6). Thanks.*
- (1) *Excellent workshop, excellent teacher!*
- (1) *Everything was OK.*

End of the excerpts ==

4. THE 6DEPLOY WORKSHOP IN GUAYAQUIL (ECUADOR)

This IPv6 Workshop took place in Guayaquil, Ecuador, on August 16th to August 17th 2010. 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=20100816_guayaquil

4.1 Overview

Individuals present at the workshop included Jordi Palet, from Consulintel representing 6DEPLOY.

During the workshop, specific IPv6 material were 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.

4.2 Attendees

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

No.	Name	Surname	Affiliation
1	Jose Luis	Aguayo Morales	UPS QUITO
2	Roberto Omar	Andrade Paredes	EPN
3	José Alfonso	Aranda Segovia	ESPOL
4	Alberto Leopoldo	Arellano Aucancela	ESPOCH
5	Néstor Xavier	Arreaga Alvarado	ESPOL
6	Jéssica Karina	Astudillo Barahona	ESPOL
7	Carlos Enrique	Avila Bazurto	TELCONET
8	Diego Fernando	Avila Pesantez	ESPOCH
9	Enrique Germán	Barreno Parra	ITSS
10	Nelson	CORNEJO	EASYNET
11	Carlos Roberto	EGAS ACOSTA	EPN
12	Albert G.	Espinal Santana	ESPOL
13	Juan Carlos	Estrada Jimenez	EPN
14	Jorge Santiago	Fuel Portilla	EPN
15	Liderman	Gualotuña Quishpe	ITSS
16	Alfonso Aníbal	Guijarro Rodríguez	UEG
17	Wilmo David	Jara Alba	ESPOL
18	IVAN MARCELO	JARA VILLACIS	UNITA CUENCA
19	Nancy Magaly	Loja Mora	UTM

20	JAIME ENRIQUE	LUCERO GUILLEN	ESPOL
21	BORIS NICOLAS	MACIAS MEJIA	SOLYTECH
22	Gustavo Javier	Mazzini Almeida	ESPOL
23	Freddy Javier	Merchán Reyes	MSIA
24	DAVID DARIO	MOREIRA MOREIRA	SOLYTECH
25	RODRIGO FERNANDO	MOROCHO ROMÁN	UTM
26	Jorge Guillermo	Núñez Luzuriaga	UESS
27	Dalia Yasmin	Ortiz Reinoso	ARMADA
28	BYRON WLADIMIR	OVIEDO BAYAS	UTEQ
29	Joffre Ramiro	Pesantez Verdesoto	ESPOL
30	Diego Javier	Reinoso Chisaguano	EPN
31	Leonardo	Salazar Estévez	EPN
32	Carlos Patricio	Samaniego Palacios	ESPOL
33	Franklin Leonel	Sánchez Catota	ITSS
34	FRANKLIN	SANCHEZ ESPINOSA	PUCESI
35	MENTOR JAVIER	SANCHEZ GUERRERO	UTA
36	Juan Agustín	Sánchez Holguín	UEG
37	DANIEL ANTONIO	SANTILLAN HARO	UNACH
38	SHIRLEY VANESSA	SORIA PANCHANA	ESPOL
39	Verónica Alexandra	Soto Vera	ESPOL
40	PILAR	URRUTIA	UTA
41	Elizabeth Andrea	Vallejo Guevara	ESPOCH
42	JAIME	VERA	EASYNET
43	Diana Maureen	Villacís Ponce	ESPOL
44	JAIME GEOVANNY	YACELGA CUSIN	ITSS
45	Silvia Alexandra	Yépez Cobos	ESPOL
46	SANTIAGO OSWALDO	YEPEZ ENRÍQUEZ	EPN

Table 4-1: Guayaquil (Ecuador) Workshop list of participants

The participants represented a wide range of the ICT community. They were technical people whose knowledge about IPv6 ranged from almost no knowledge at all 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 on 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 prioritised and so manage the logistics accordingly. The programme of the workshop is presented in the following table:

Date	Time	Title of session
16/8/2009	9:00	IPv6 Basics
17/8/2009	12:00	IPv6 Startup

Table 4-2: Guayaquil (Ecuador) Workshop programme

4.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
IPv6 Basics	Jordi Palet	Consulintel
IPv6 Startup	Jordi Palet	Consulintel

Table 4-3: Guayaquil (Ecuador) Workshop list of modules used

4.4.1 Modules

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

- **IPv6 Basics:** This module explains why a new version for IP, IPv6, has been developed. A brief history of IPv6, its motivation and benefits are given. IPv6 packet header, extensions headers and 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. Transition concepts are introduced.
- **IPv6 Startup:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts. In addition, some practice with basic transitions mechanisms using hosts.

4.5 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 organisation and job responsibilities, and
- his/her plans for IPv6 deployment in his/her organisation.

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 organisation”, etc.

4.5.1 General questions related to participants and IPv6

About the participants		
46 participants were present, 39 questionnaires were returned		
Employment sector	Government	3
	University or other higher education	31
	Schools or further education	2
	Research	3
	Health	0
	Commercial	7
	Other (please specify)	(3)*
Job function	Government Advisor	1
	Senior Manager	3
	IT Manager	13
	Systems Administrator	5
	Network Administrator	14
	Researcher / Postgraduate	2
	Undergraduate	1
	Other (please specify)	(10)*
Usage of IPv6		
Do you use IPv6 yourself?	Yes	8
	No	24
Does your organisation use IPv6?	Yes	5
	No, but planned in this year	7
	No, but planned in the next year	9
	No, but planned in the longer term	7
	No, and no plans as yet	9

Table 4-4: General questions related to participants and IPv6

4.5.2 Questions regarding the workshop

About the Workshop				
Usefulness of the topic	Very useful	Useful	Slightly useful	Not useful
Presentation 1 - IPv6 Introduction	24	11	0	0
Presentation 2 - IPv6 Transition	26	9	1	0
Quality of the presentation	Excellent	Good	Average	Poor
Presentation 1 - IPv6 Introduction	32	4	0	0
Presentation 2 - IPv6 Transition	32	4	0	0
Familiarity with the topic?	None	Some	Most	All
Presentation 1 - IPv6 Introduction	4	21	10	1
Presentation 2 - IPv6 Transition	7	22	6	1

Quality of the course documentation	Excellent	Good	Average	Poor
	24	11	0	0
General workshop organisation	Excellent	Good	Average	Poor
	24	11	1	0
Recommend to your colleagues?	yes	no		
	35	0		

Table 4-5: Questions regarding the workshop

4.5.3 Results graphics

Following are some graphics that represent the above results in a more friendly way, so as to ease their interpretation.

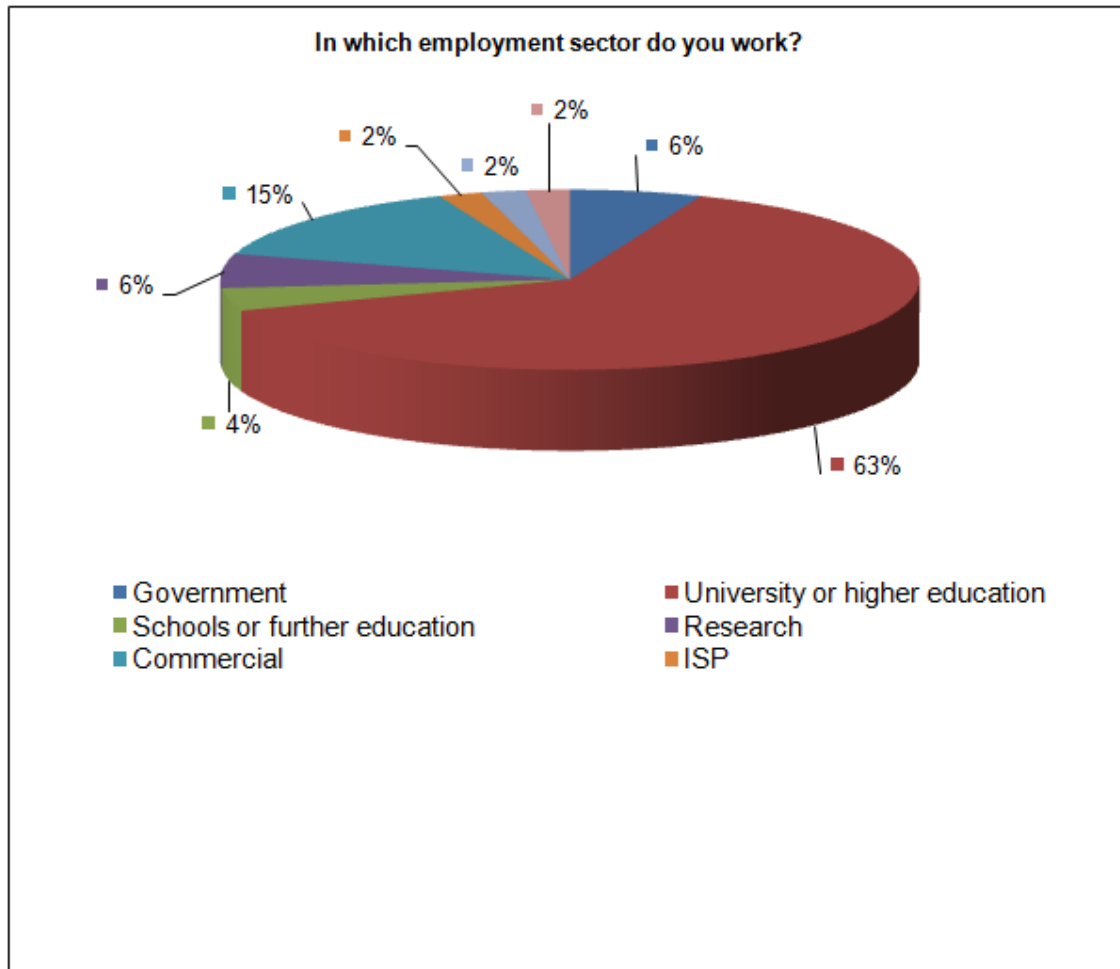


Figure 4-1: In which employment sector do you work?

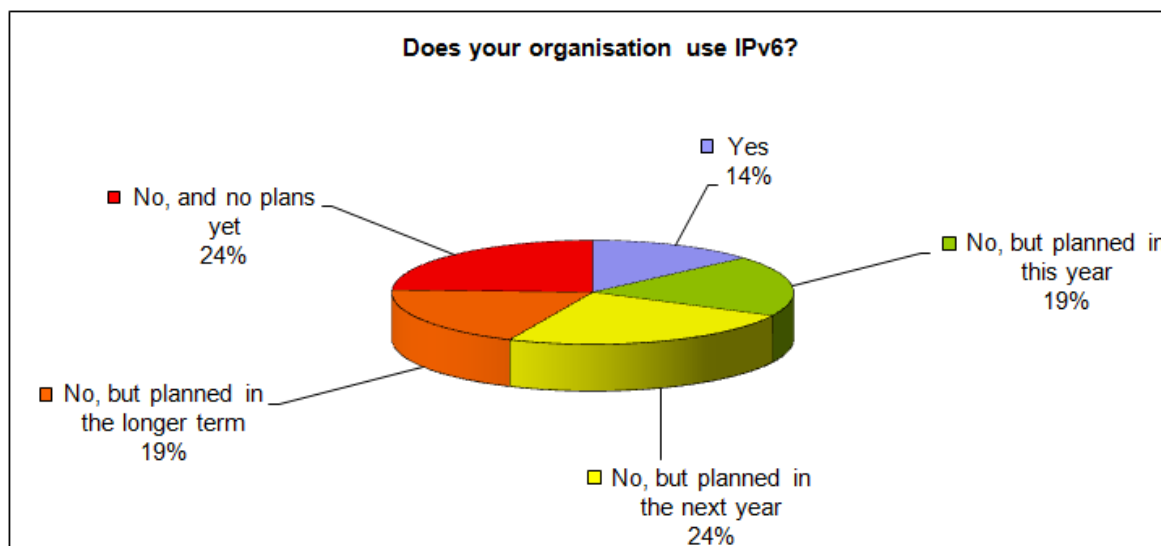


Figure 4-2: Does your organisation use IPv6?

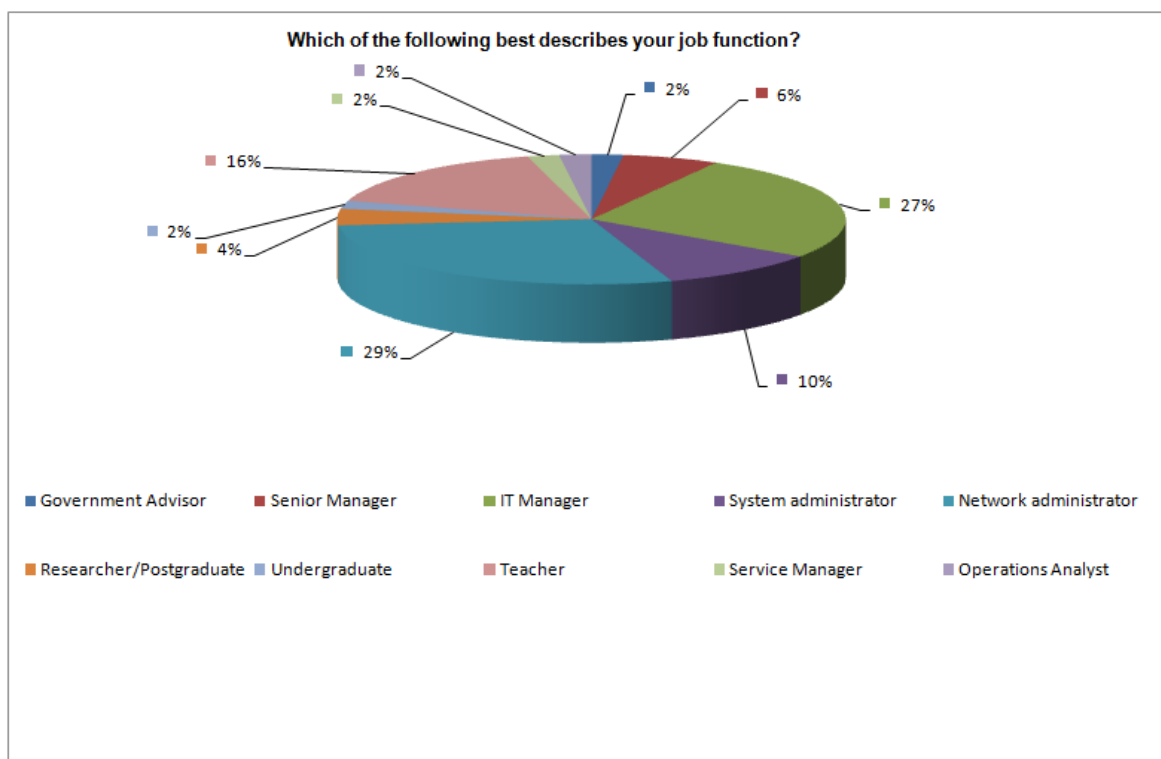


Figure 4-3: Which of the following best describes your job function?

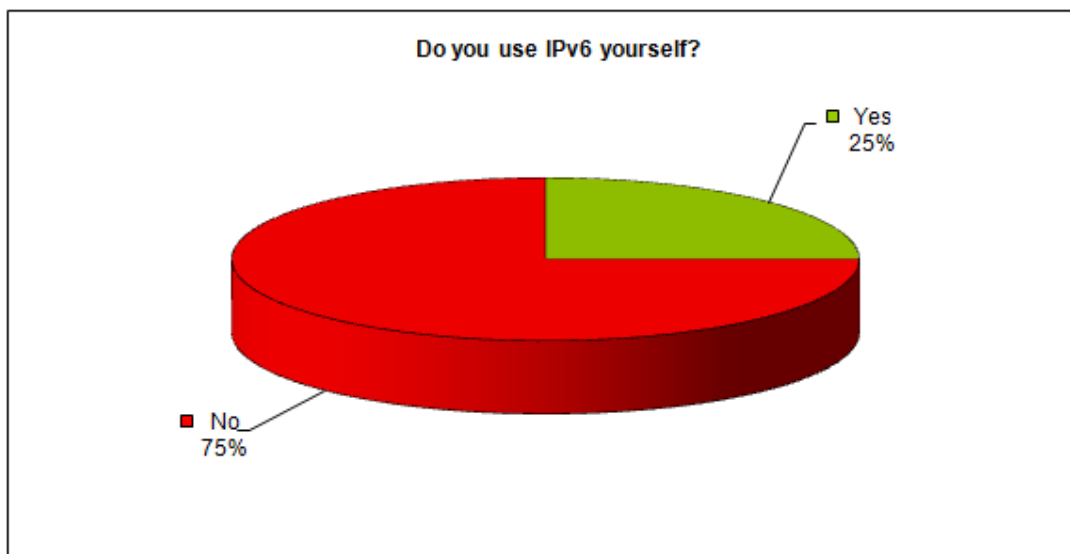


Figure 4-4: Do you use IPv6 yourself?

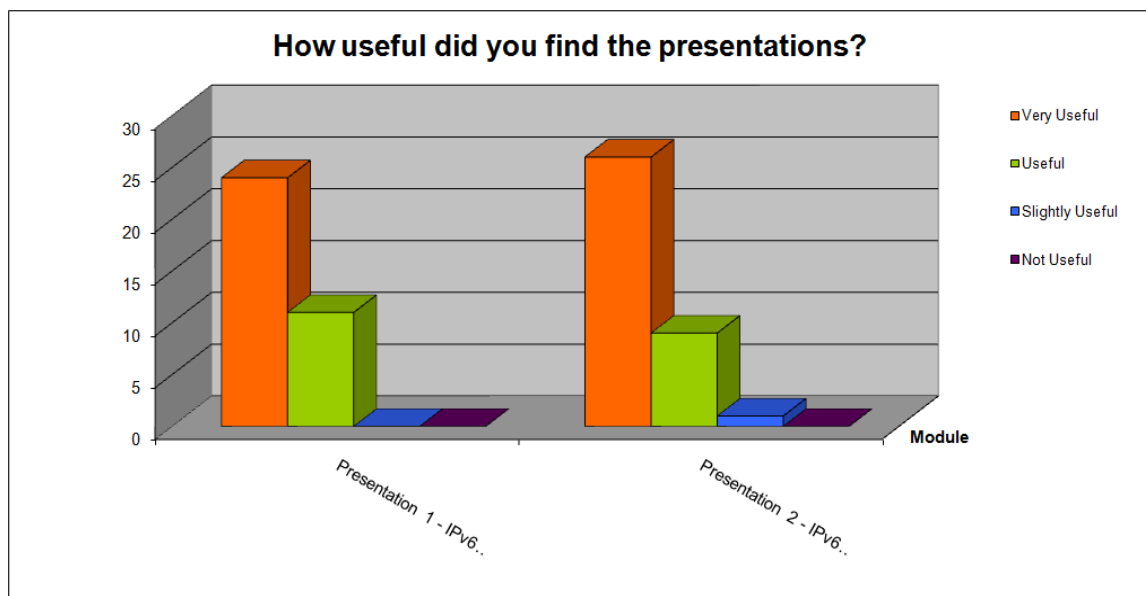


Figure 4-5: How useful did you find the presentations?

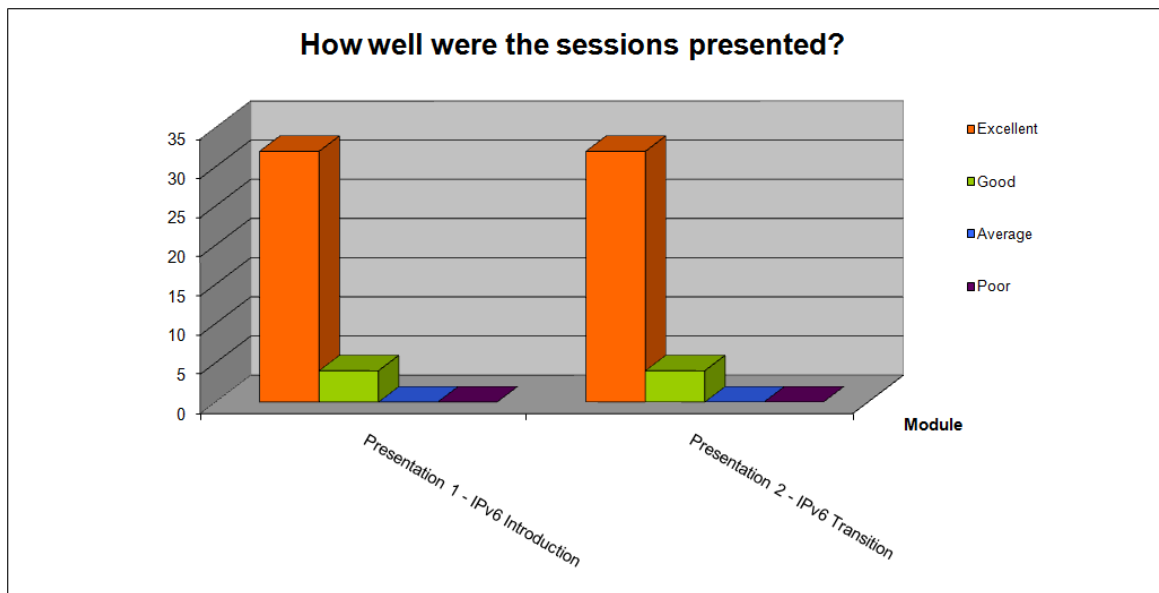


Figure 4-6: How well were the sessions presented?

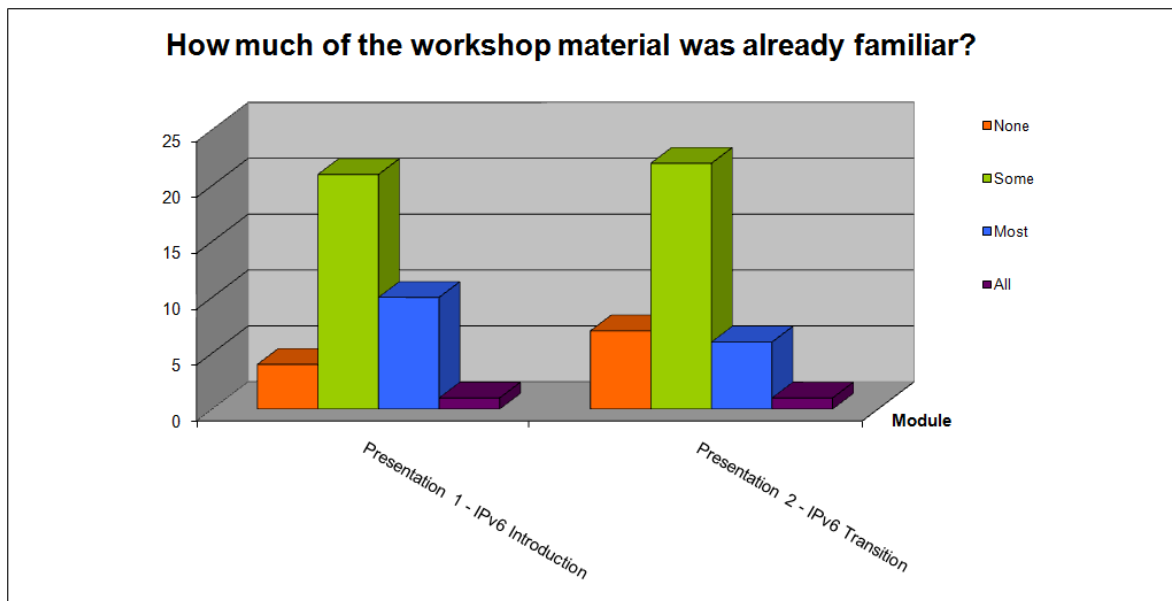


Figure 4-7: How much of the workshop material was already familiar?

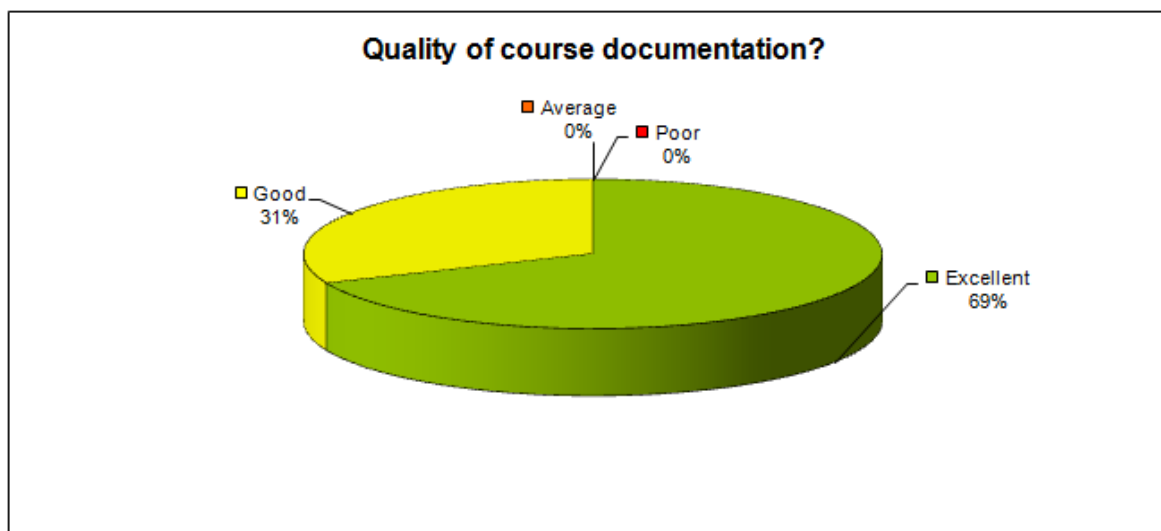


Figure 4-8: Quality of course documentation?

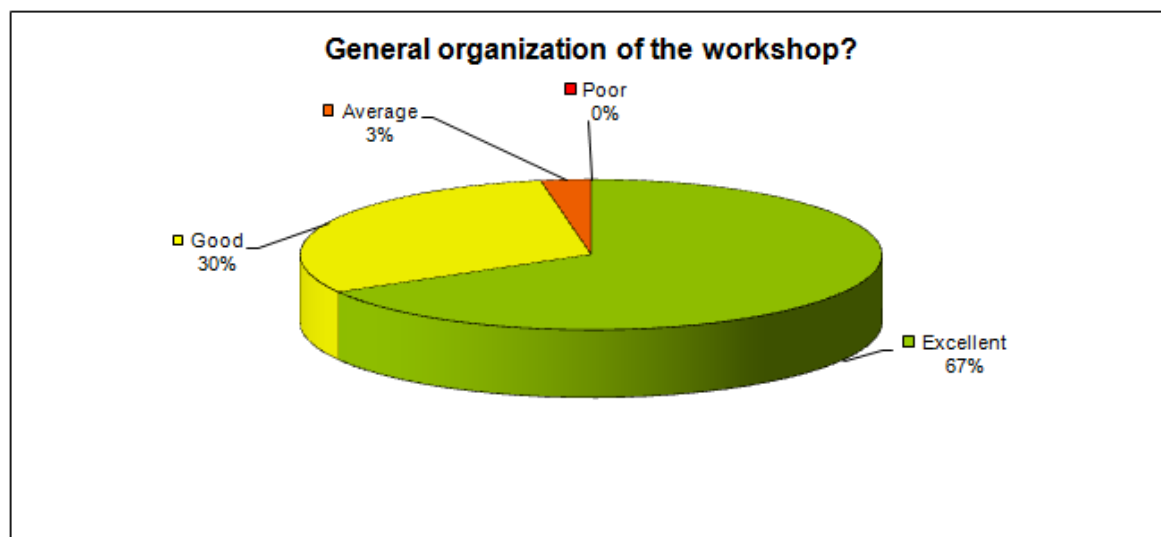


Figure 4-9: General organization of the workshop?

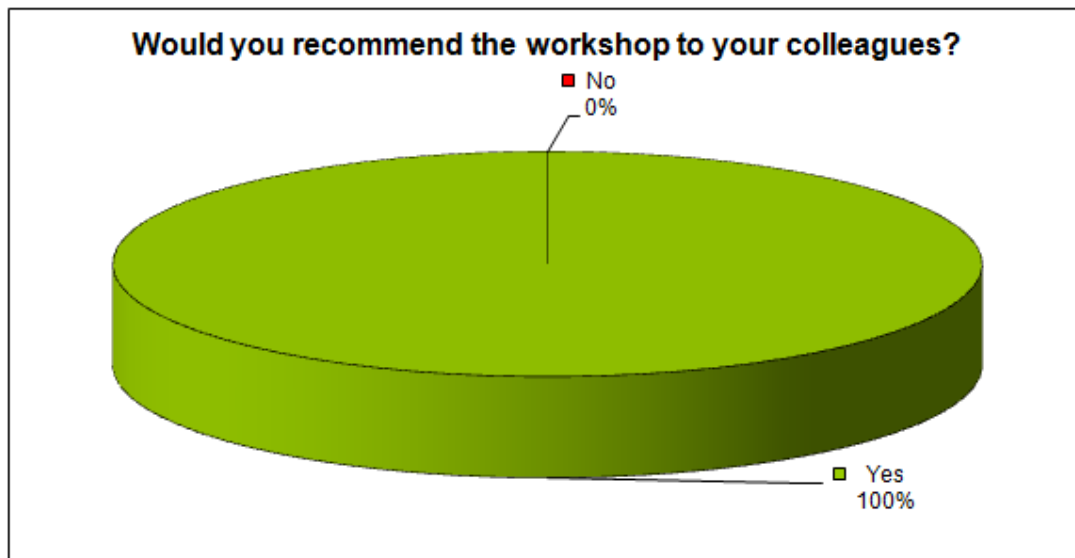


Figure 4-10: Would you recommend the workshop to your colleagues?

4.5.4 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.

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**?:*

- (6) *IPv6 Routing.*
- (4) *IPv6 security.*
- (2) *IPv6 Addressing Design.*
- (2) *IPv6 transition plans.*
- (2) *Labs with routers.*
- (2) *IPv6 services.*
- (1) *More detail on transition mechanisms.*

- (1) *IPv6 on mobile devices.*
- (1) *More practice about relay.*
- (1) *It's OK but it could be a little more detailed practice..*
- (1) *Implementing.*
- (1) *I want more practice for beginning with IPv6 in my University and for implement IPv6 for Thesis and investigation project.*
- (1) *Implement a Teredo Server in local network and open source version.*
- (1) *IPv6 wireless networks.*
- (1) *Teredo tunnelling.*
- (1) *Multicast.*
- (1) *Anycast.*
- (1) *More practice on IPv6 configuration.*
- (1) *IP Telephony.*
- (1) *IP Television.*
- (1) *IPv6 Examples.*

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

- (2) *IPv6 History.*
- (2) *IPv6 Intro.*
- (1) *About protocols of IPv6.*
- (1) *Multicast.*

*Any **other comments**:*

- (3) *More labs would be better.*
- (1) *Need more practice time.*
- (1) *Excellent Jordi, sure the whole Internet community is proud and grateful for you. Go ahead and thanks.*
- (1) *This workshop was very good. Congratulations!!!*
- (1) *Excellent workshop, may be it could be longer, may be 3 days.*
- (1) *It would be interesting to do more workshops.*
- (1) *Interesting event for the update on this issues that will impact our country.*
- (1) *Congratulations, thanks for sharing your knowledge.*

End of the excerpts ==

5. THE 6DEPLOY WORKSHOP IN BOGOTÁ (COLOMBIA)

This three days workshop took place in Bogotá, Colombia, on September 27th to 29th 2010. 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=20100927_bogota_colombia

5.1 Overview

Individuals present at the workshop included Jordi Palet and Alvaro Vives, from Consulintel representing 6DEPLOY.

The first day of the workshop, during the morning, the event was presented, including some words from different authorities and from LACNIC.



Figure 5-1: Workshop Opening

Shown in the picture above, from left to right, are: Alejandro Guzmán (LACNIC/Internexa), Carlos Ospina (CCIT/NAP Colombia), Jordi Palet (6DEPLOY/Consulintel), and Héctor Tamayo (CCIT/NAP Colombia).

On the first two days (27th and 28th September), specific IPv6 material was presented,

including an introduction to basic IPv6, concepts on the transition and coexistence of IPv4 and IPv6, 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. In addition, hands-on practice was done involving hosts and transition mechanisms.

An interesting discussion took place involving the ISPs present and the Bogotá NAP, the IXP where all Colombian ISPs are connected in order to exchange Colombian traffic.

On 29th September 2010, the main issue was IPv6 routing, providing some theory about IPv6 routing protocols and the hands-on labs using two 6DEPLOY testbeds.

5.2 Attendees

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

No.	Name	Affiliation
1	Omar Darío Rojas	BT LatAm Colombia
2	Harold Moreno	BT LatAm Colombia
3	Jose Alfredo Cardenas Molina	BT LatAm Colombia
4	Andres Felipe Echeverri Agudelo	CCIT
5	Anibal Orjuela Peña	CCIT
6	Héctor Tamayo	CCIT
7	Giovanna Castro Burgos	COMCEL
8	Manuel Mendoza	COMCEL
9	Paula Soraca	COMCEL
10	Pablo A. García P.	DIVEO de Colombia
11	Anderson Gordillo	DIVEO de Colombia
12	Francisco Javier Díaz	ETB
13	Adriana Pinzón Páramo	ETB
14	Carlos Julio Corredor García	ETB
15	Darío Vidales Olaya	ETB
16	Juan Pablo Peña	ETB
17	Miguel Antonio Villalba	ETB
18	Wilner Andrés Gallego	ETB
19	Gustavo León	FUAC
20	Gustavo Adolfo Erazo	FUNDACION UNIVERSITARIA KONRAD LORENZ
21	Andres Arturo Diaz Montes	IFX NETWORKS
22	Mario Andres Rueda Jaimes	IFX NETWORKS
23	Oscar Jimenez	IFX NETWORKS
24	Andres Gómez	RED UNO
25	Efraín Lizarazo	RED UNO
26	Jonatan Arango	RED UNO
27	Andres Ernesto Salinas	RENATA
28	Darwin Estrada	Telefónica Telecom
29	Jairo Rojas	Telefónica Telecom
30	Juan Carlos Rodriguez	Telefónica Telecom
31	Amancio Mora	TELMEX
32	Armando Mora	TELMEX

33	Oscar Manuel Sanchez	TELMEX
34	Roberto Zabala Olaya	TELMEX
35	Luis Francisco García	U. Antonio Nariño
36	Edwin Daniel Durán	U. Católica
37	Orlando Cristancho Carrillo	U. Central
38	Yasmin Becerra	U. Minuto de Dios
39	Johany Armando Carreño	U. Politécnico
40	Luis Carlos Gil	U. San Buenaventura
41	Diego Rocha	U. Unitec
42	Rafael Cala	UNE EPM TELECOMUNICACIONES
43	Bayron Arturo Araujo	UNE EPM TELECOMUNICACIONES
44	Alexander Garcia Perez	Universidad EAN
45	Gustavo León Chaves	U. Autónoma de Colombia - Bogotá
46	Jonny Suárez	Colombia Móvil
47	Eduardo Páez	Colombia Móvil

Table 5-1: Bogotá Workshop list of participants

The participants represented a wide range of the ICT community. They were technical people whose knowledge about IPv6 ranged from almost no knowledge at all 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 on 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 prioritised and so manage the logistics accordingly. The programme of the workshop is presented in the following table:

Date	Time	Title of session
27/9/2010	9:00	Introducción a IPv6
27/9/2010	11:30	Práctica con Hosts
27/9/2010	14:30	Mecanismos de Transición
28/9/2010	9:00	Prácticas de Mecanismos de Transición
28/9/2010	11:00	Direccionamiento IPv6
28/9/2010	12:00	Práctica: IPv6 Addressing
28/9/2010	15:00	DNS IPv6
29/9/2010	9:30	IPv6 Routing
29/9/2010	10:00	Práctica: OSPF, BGP

Table 5-2: Bogotá Workshop programme

5.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
Introducción a IPv6	Jordi Palet	Consulintel
Práctica con Hosts	Jordi Palet	Consulintel
Mecanismos de Transición	Jordi Palet	Consulintel
Practicas de Mecanismos de Transición	Jordi Palet	Consulintel
Direccionamiento IPv6	Alvaro Vives	Consulintel
DNS IPv6	Alvaro Vives	Consulintel
IPv6 Routing	Alvaro Vives	Consulintel
Práctica: OSPF, BGP	Alvaro Vives	Consulintel

Table 5-3: Bogotá 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 are given. IPv6 packet header, extensions headers and differences with IPv4 headers. Packet size issues and upper layer considerations are also treated. Transition concepts are introduced.
- **Práctica con Hosts:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts. In addition, some practice with basic transitions mechanisms using hosts.
- **Mecanismos de Transición:** 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).
- **Practicas de Mecanismos de Transición:** Practice transition mechanisms concepts, like 6to4, Teredo and tunnelling.
- **Direccionamiento IPv6:** This module explains the 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.

- **DNS IPv6:** This module describes new Resource Records for IPv6 DNS, availability of IPv6 in the root servers zone and CC-TLDs, etc.
- **IPv6 Routing:** This module mainly describes the differences between IPv4 and IPv6 routing protocols for OSPFv3, EIGRP, RIPng, BGP4+, and ISIS.
- **Práctica: OSPF, BGP:** Hands on practice using 6DEPLOY testbeds (Paris and Sofía).

5.5 Photographs taken at the event



Figure 5-2: Jordi Palet (Consulintel) during hands-on



Figure 5-3: Attendees to the workshop



Figure 5-4: Attendees to the workshop

5.6 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 organisation and job responsibilities, and

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

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 organisation”, etc.

5.6.1 General questions related to participants and IPv6

About the participants		
47 participants were present, 18 questionnaires were returned		
Employment sector	Government	3
	University or other higher education	3
	Schools or further education	0
	Research	3
	Health	0
	Commercial	3
	Other (please specify)	(8)*
Job function	Government Advisor	1
	Senior Manager	0
	IT Manager	3
	Systems Administrator	0
	Network Administrator	11
	Researcher / Postgraduate	5
	Undergraduate	2
	Other (please specify)	(2)*
Usage of IPv6		
Do you use IPv6 yourself?	Yes	5
	No	13
Does your organisation use IPv6?	Yes	4
	No, but planned in this year	8
	No, but planned in the next year	0
	No, but planned in the longer term	1
	No, and no plans as yet	4

* See the graphics section for more information

Table 5-4: General questions related to participants and IPv6

5.6.2 Questions regarding the workshop

About the Workshop				
Usefulness of the topic	Very useful	Useful	Slightly useful	Not useful
Presentation 1 - IPv6 Introduction	12	3	1	0
Presentation 2 - IPv6 Transition	11	5	0	0
Presentation 3 - IPv6 Routing	10	4	1	0
Practice 1 - Hosts	10	5	1	0
Practice 2 - Transition Mechanisms	9	6	1	0
Practice 3 - IPv6 Routing	10	5	1	0

223794	6DEPLOY	D1.25: Report of the 24 th Workshop		
Quality of the presentation	Excellent	Good	Average	Poor
Presentation 1 - IPv6 Introduction	14	2	0	0
Presentation 2 - IPv6 Transition	13	3	0	0
Presentation 3 - IPv6 Routing	10	5	1	0
Practice 1 - Hosts	10	5	1	0
Practice 2 - Transition Mechanisms	7	7	2	0
Practice 3 - IPv6 Routing	9	5	2	0
Familiarity with the topic?	None	Some	Most	All
Presentation 1 - IPv6 Introduction	1	4	11	0
Presentation 2 - IPv6 Transition	4	11	1	0
Presentation 3 - IPv6 Routing	4	5	6	1
Practice 1 - Hosts	7	7	1	1
Practice 2 - Transition Mechanisms	8	7	1	0
Practice 3 - IPv6 Routing	5	5	5	1
Quality of the course documentation	Excellent	Good	Average	Poor
	10	7	0	0
General workshop organisation	Excellent	Good	Average	Poor
	10	7	0	0
Recommend to your colleagues?	yes	no		
	17	0		

Table 5-5: Questions regarding the workshop

5.6.3 Results graphics

Following are some graphics that represent the above results in a more friendly way, so as to ease their interpretation.

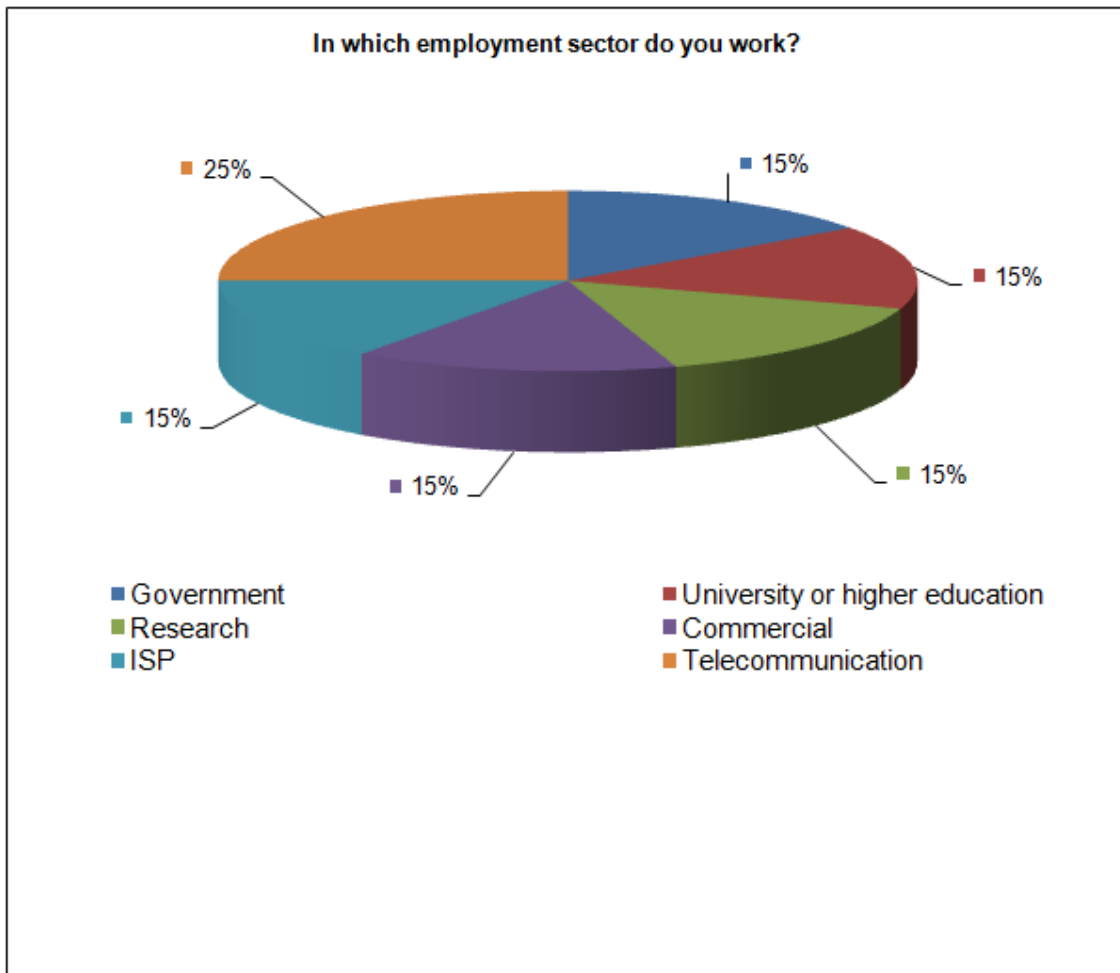


Figure 5-5: In which employment sector do you work?

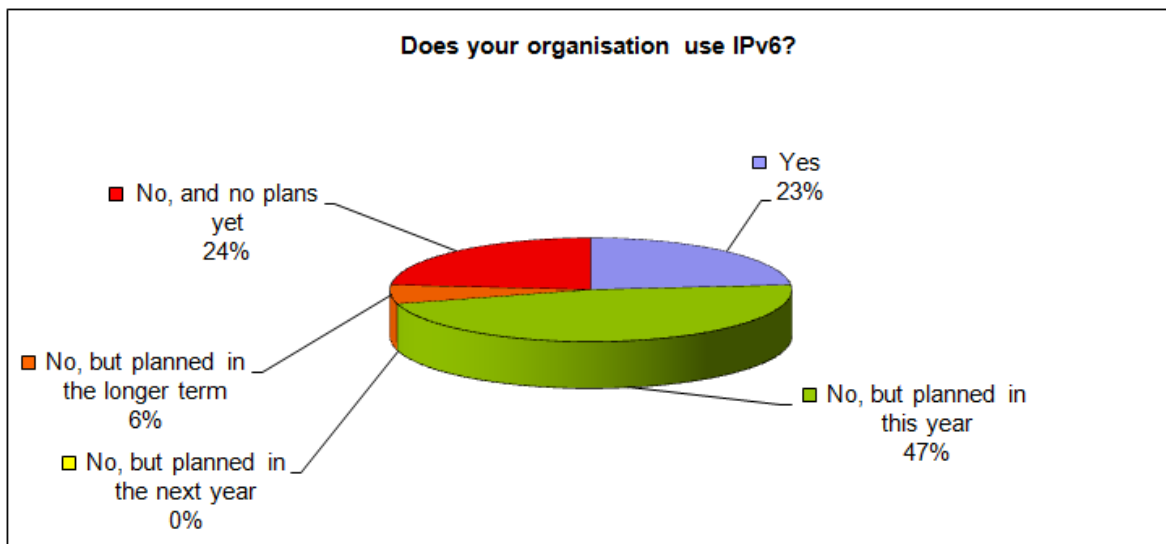


Figure 5-6: Does your organisation use IPv6?

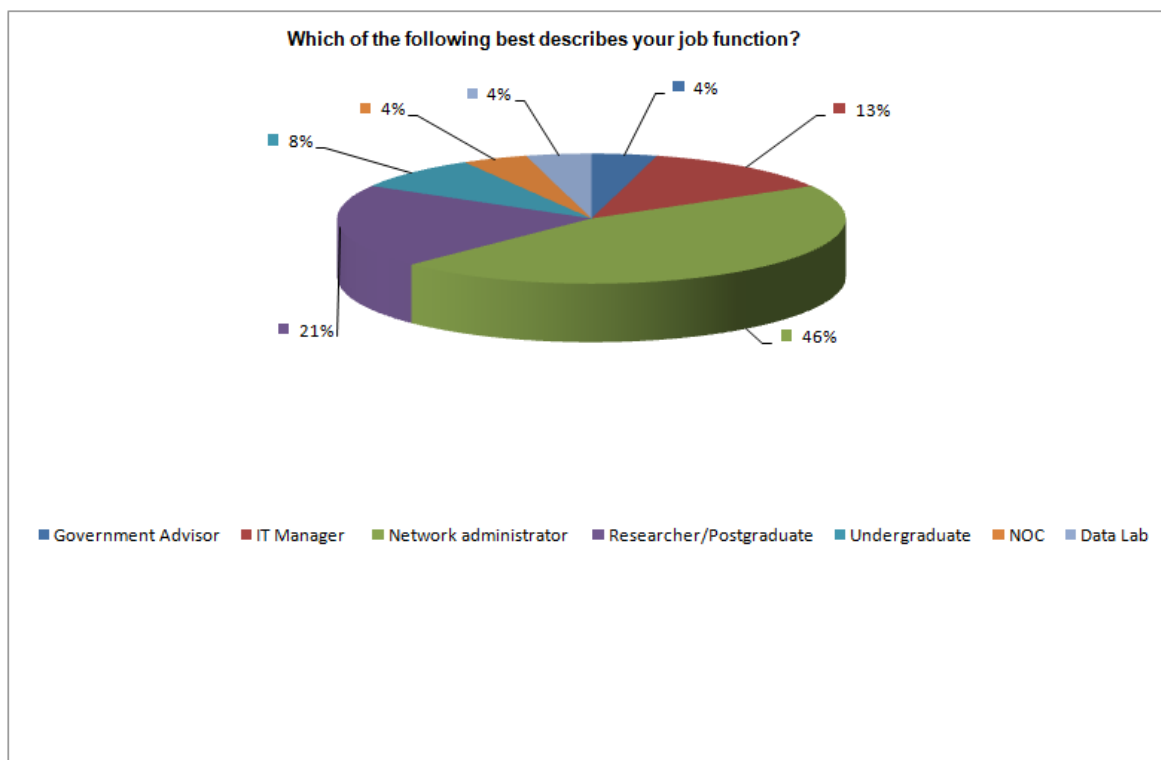


Figure 5-7: Which of the following best describes your job function?

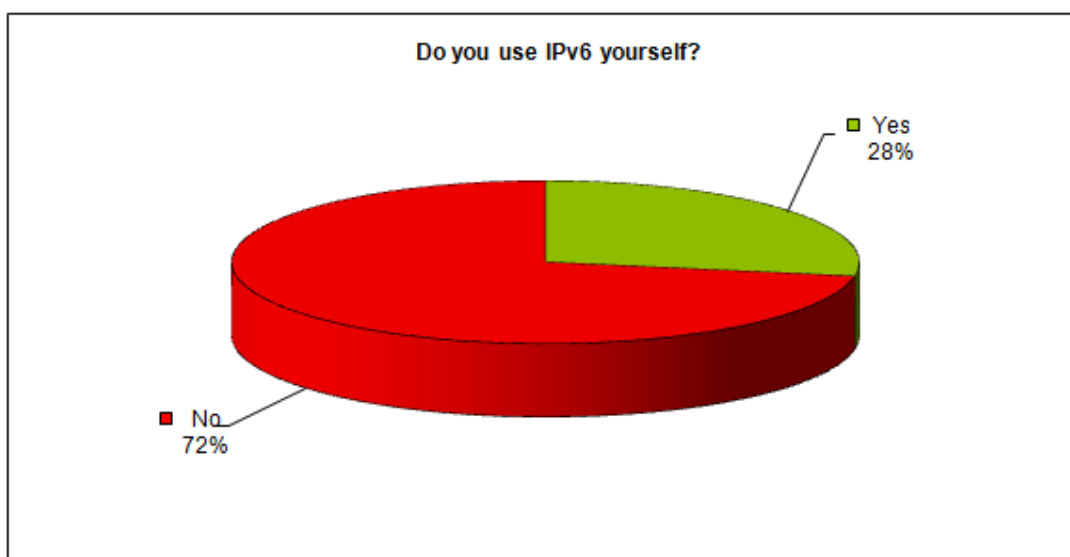


Figure 5-8: Do you use IPv6 yourself?

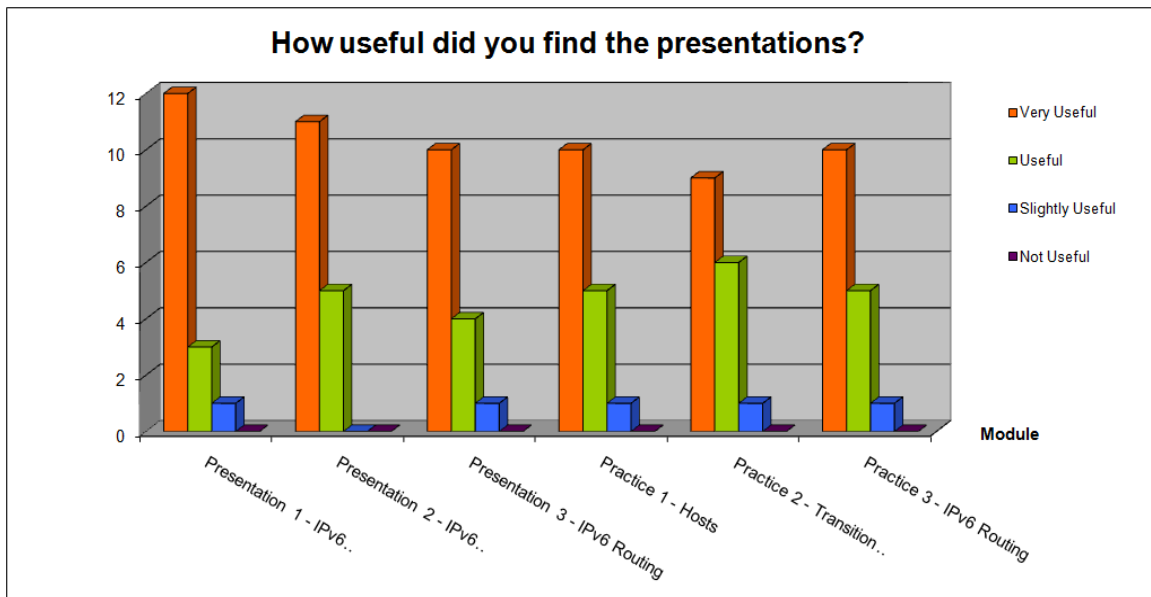


Figure 5-9: How useful did you find the presentations?

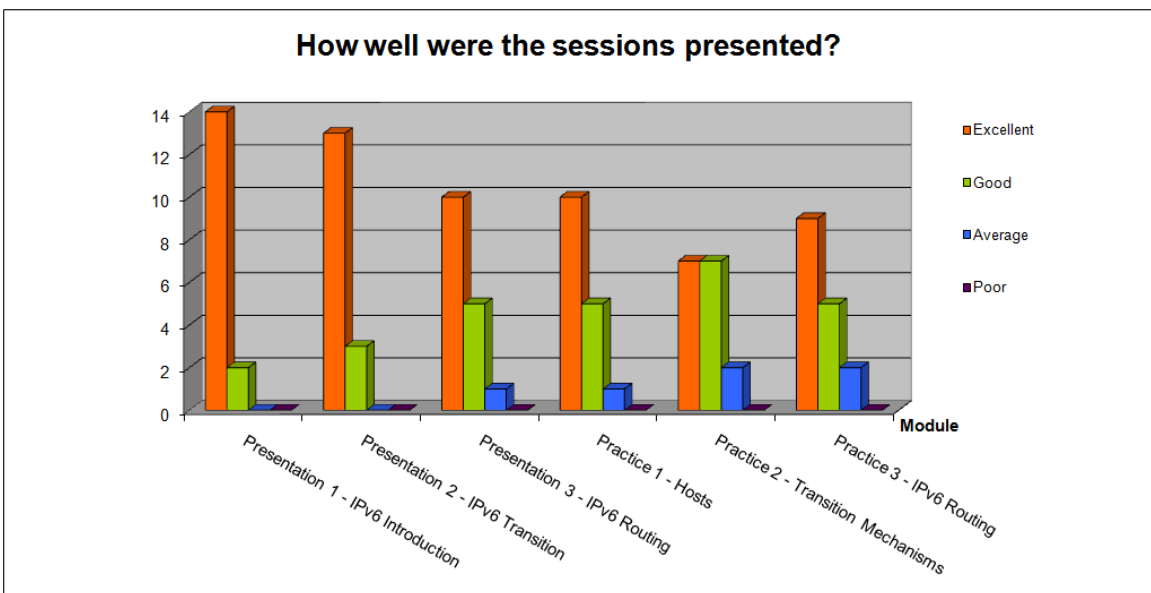


Figure 5-10: How well were the sessions presented?

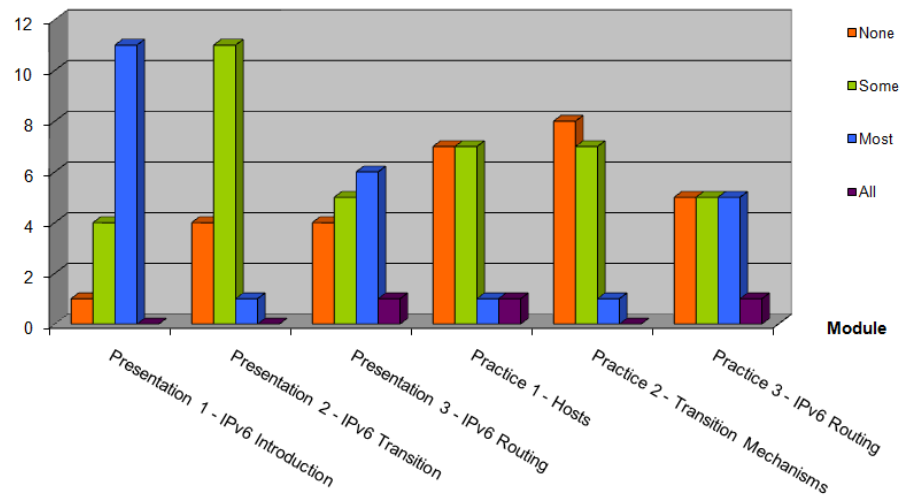
How much of the workshop material was already familiar?

Figure 5-11: How much of the workshop material was already familiar?

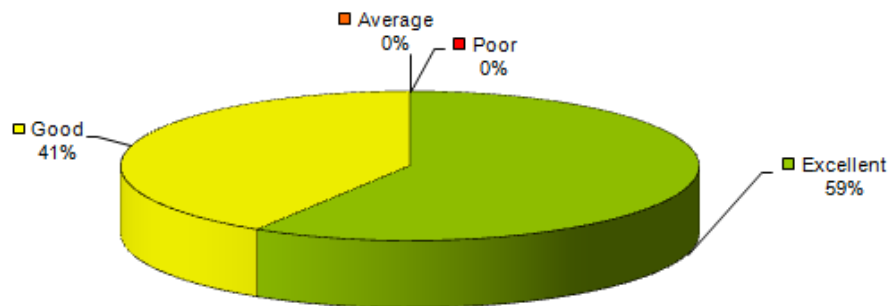
Quality of course documentation?

Figure 5-12: Quality of course documentation?

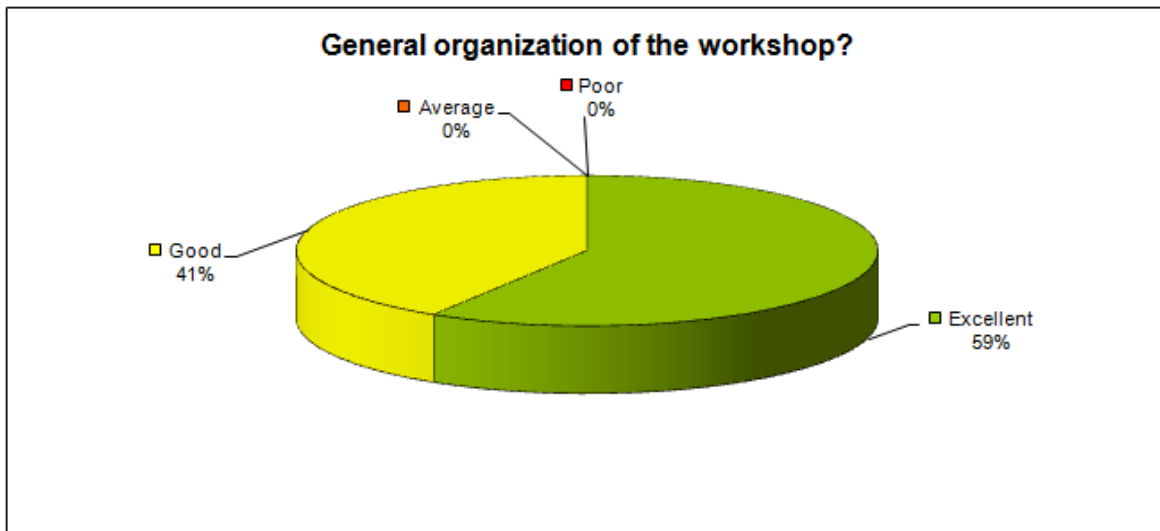


Figure 5-13: General organization of the workshop?

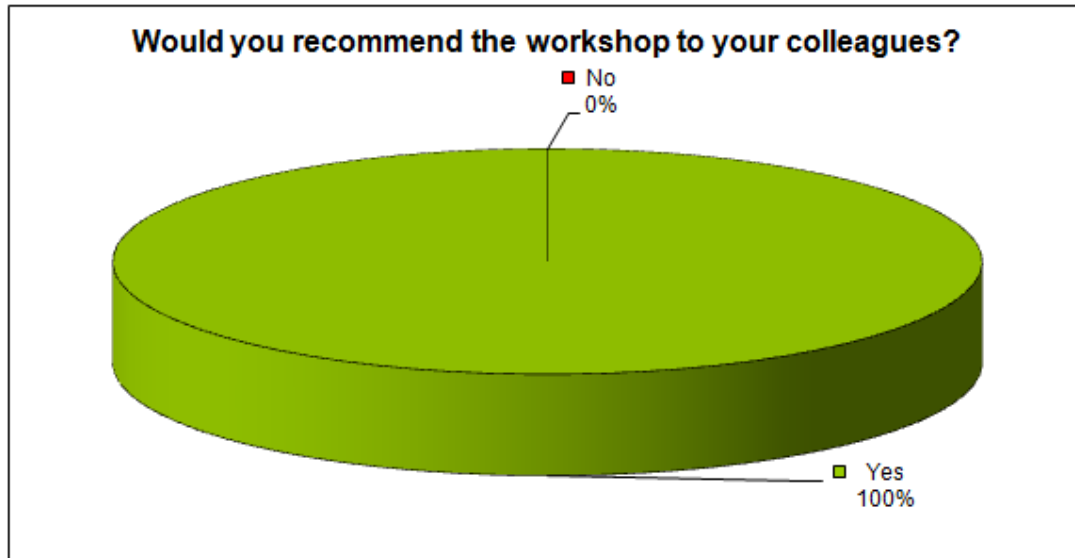


Figure 5-14: Would you recommend the workshop to your colleagues?

5.6.4 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.

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**?:*

- (2) *Transition mechanisms.*
- (2) *More routing practice.*
- (2) *DHCPv6.*
- (1) *Teacher's real experiences.*
- (1) *Addressing and practical cases.*
- (1) *Transition schemes on detail.*
- (1) *6to4 and Teredo relay labs.*
- (1) *QoS.*
- (1) *Frame format and traffic analysis.*
- (1) *Protocol stack around IPv6.*
- (1) *Government policy.*
- (1) *End users implementation.*
- (1) *Perimeter security with IPv6.*
- (1) *Internal/external routing over IPv6.*
- (1) *VPN/MPLS services, and transport over MPLS because LDP doesn't support IPv6.*

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

- (2) *Intro to IPv6.*

*Any **other comments**:*

- (1) *Very Good Workshop.*
- (1) *The event was very practical and interesting with implementing IPv6 in mind. Clarifies lot of doubts.*
- (1) *I suggest revising workshop methodology. Practice should have a step-by-step detailed document. I recommend to use simulating software like Packet tracer, bosson, Dynagen, etc..*
- (1) *Congratulations for the workshop.*
- (1) *I appreciate this kind of workshops because they are useful.*
- (1) *Make the course documentation available in advance.*

End of the excerpts ==

6. THE 6DEPLOY WORKSHOP IN MEDELLIN (COLOMBIA)

This three days workshop took place in Medellin, Colombia, on September 29th to October 1st 2010. 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=20100929_medellin_colombia

6.1 Overview

Individuals present at the workshop included Jordi Palet and Alvaro Vives, from Consulintel representing 6DEPLOY.

On the first two days (29th and 30th September), specific IPv6 material was presented, including an introduction to basic IPv6, concepts on the transition and coexistence of IPv4 and IPv6, 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. In addition, hands-on practice was done involving hosts and transition mechanisms.

On 1st October 2010 the main issue was IPv6 routing, providing some theory about IPv6 routing protocols and the hands-on labs using two 6DEPLOY testbeds.

6.2 Attendees

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

No.	Name	Affiliation
1	Saul Fernando Gomez Gil	EDATEL
2	Eduard Dario Uribe Peña	EDATEL
3	Ana Maria Zapata Atehortua	EDATEL
4	Wilmar Alberto Moreno	EDATEL
5	Raul Jaramillo	FLYWAN
6	Jorge Osorio	FLYWAN
7	Juan Camilo Restrepo	FLYWAN
8	Marcela Botero	INTERNEXA
9	Andrés Beltrán	INTERNEXA
10	Henri Jiménez	INTERNEXA
11	Diego Alejandro Laverde	INTERNEXA
12	Oscar Gómez	INTERNEXA

13	Carlos Julio Benavides	INTERNEXA
14	Carlos Florez	Interservicios
15	Delio Valencia	Interservicios
16	Marcos Atehortúa	Interservicios
17	Héctor García	MPW
18	Adrian Amaya	MPW
19	Alejandro Guzmán	LACNIC
20	Luis Felipe Londoño	TIGO
21	Mauricio Villegas Ramelli	TIGO
22	Carolina Del Valle Soto	UdeM
23	Juan David Molina	UNE
24	Javier Gonzalo Arboleda Montoya	UNE
25	Yomaira García	UNE
26	Duver Toro	UNE
27	Rubén Echeverri	UNE
28	Julián Rendon	UNE
29	José Alejandro Bonilla	UNE
30	Edwin Alexander Parra Carmona	UNE
31	Juliana Arroyave Rincón	UNE
32	Jackson Reina Alzate	UPB
33	Ferney Orlando Amaya	UPB

Table 6-1: Medellín Workshop list of participants

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

6.3 Workshop programme

The agenda was agreed on 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 prioritised and so manage the logistics accordingly. The programme of the workshop is presented in the following table:

Date	Time	Title of session
29/9/2010	9:00	Introducción a IPv6
29/9/2010	11:30	Práctica con Hosts
29/9/2010	14:30	Mecanismos de Transición
30/9/2010	9:00	Prácticas de Mecanismos de Transición
30/9/2010	11:00	Direccionamiento IPv6
30/9/2010	12:00	Práctica: IPv6 Addressing

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30/9/2010	15:00	DNS IPv6
1/10/2010	9:30	IPv6 Routing
1/10/2010	10:00	Práctica: OSPF, BGP

Table 6-2: Medellín Workshop programme

6.4 Presentation material

The following material was presented:

Modules	Presented by	Affiliation
Introducción a IPv6	Jordi Palet	Consulintel
Práctica con Hosts	Jordi Palet	Consulintel
Mecanismos de Transición	Jordi Palet	Consulintel
Practicas de Mecanismos de Transición	Jordi Palet	Consulintel
Direccionamiento IPv6	Alvaro Vives	Consulintel
DNS IPv6	Alvaro Vives	Consulintel
IPv6 Routing	Alvaro Vives	Consulintel
Práctica: OSPF, BGP	Alvaro Vives	Consulintel

Table 6-3: Medellín Workshop list of modules used

6.4.1 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 are given. IPv6 packet header, extensions headers and differences with IPv4 headers. Packet size issues and upper layer considerations are also treated. Transition concepts are introduced.
- **Práctica con Hosts:** Practice basic IPv6 concepts like addresses, autoconfiguration, neighbor discovery protocol using hosts. In addition, some practice with basic transitions mechanisms using hosts.
- **Mecanismos de Transición:** 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).

- **Practicas de Mecanismos de Transición:** Practice transition mechanisms concepts, like 6to4, Teredo and tunnelling.
- **Direccionamiento IPv6:** This module explains the 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.
- **DNS IPv6:** This module describes new Resource Records for IPv6 DNS, availability of IPv6 in the root servers zone and CC-TLDs, etc.
- **IPv6 Routing:** This module mainly describes the differences between IPv4 and IPv6 routing protocols for OSPFv3, EIGRP, RIPng, BGP4+, and ISIS.
- **Práctica: OSPF, BGP:** Hands on practice using 6DEPLOY testbeds (Paris and Sofía).

6.5 Photographs taken at the event



Figure 6-1: Jordi Palet (Consulintel) presenting



Figure 6-2: Attendees to the workshop

6.6 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 organisation and job responsibilities, and
- his/her plans for IPv6 deployment in his/her organisation.

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 organisation", etc.

6.6.1 General questions related to participants and IPv6

About the participants

33 participants were present, 24 questionnaires were returned

Employment sector	Government	1
	University or other higher education	3
	Schools or further education	0
	Research	1
	Health	0
	Commercial	9
	Other (please specify)	(12)*

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Job function	Government Advisor	0	
	Senior Manager	1	
	IT Manager	1	
	Systems Administrator	2	
	Network Administrator	11	
	Researcher / Postgraduate	3	
	Undergraduate	0	
	Other (please specify)	(7)*	
Usage of IPv6			
Do you use IPv6 yourself?	Yes	4	
	No	20	
Does your organisation use IPv6?	Yes	0	
	No, but planned in this year	5	
	No, but planned in the next year	12	
	No, but planned in the longer term	3	
	No. and no plans as yet	4	

* See the graphics section for more information

Table 6-4: General questions related to participants and IPv6

6.6.2 Questions regarding the workshop

About the Workshop				
Usefulness of the topic	Very useful	Useful	Slightly useful	Not useful
Presentation 1 - IPv6 Introduction	20	4	0	0
Presentation 2 - IPv6 Transition	22	2	0	0
Presentation 3 - IPv6 Routing	19	5	9	0
Practice 1 - Hosts	16	8	0	0
Practice 2 - Transition Mechanisms	14	10	0	0
Practice 3 - IPv6 Routing	15	9	0	0
Quality of the presentation	Excellent	Good	Average	Poor
Presentation 1 - IPv6 Introduction	20	3	0	0
Presentation 2 - IPv6 Transition	19	4	0	0
Presentation 3 - IPv6 Routing	16	5	2	0
Practice 1 - Hosts	13	8	2	0
Practice 2 - Transition Mechanisms	12	8	1	1
Practice 3 - IPv6 Routing	12	6	4	0
Familiarity with the topic?	None	Some	Most	All
Presentation 1 - IPv6 Introduction	3	10	10	1
Presentation 2 - IPv6 Transition	11	9	4	0
Presentation 3 - IPv6 Routing	10	9	4	1
Practice 1 - Hosts	10	10	4	0
Practice 2 - Transition Mechanisms	15	7	2	0
Practice 3 - IPv6 Routing	12	8	3	1
Quality of the course documentation	Excellent	Good	Average	Poor
	11	12	0	0

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General workshop organisation	Excellent	Good	Average	Poor
	14	10	0	0
Recommend to your colleagues?	yes	no		
	23	0		

Table 6-5: Questions regarding the workshop

6.6.3 Results graphics

Following are some graphics that represent the above results in a more friendly way, so as to ease their interpretation.

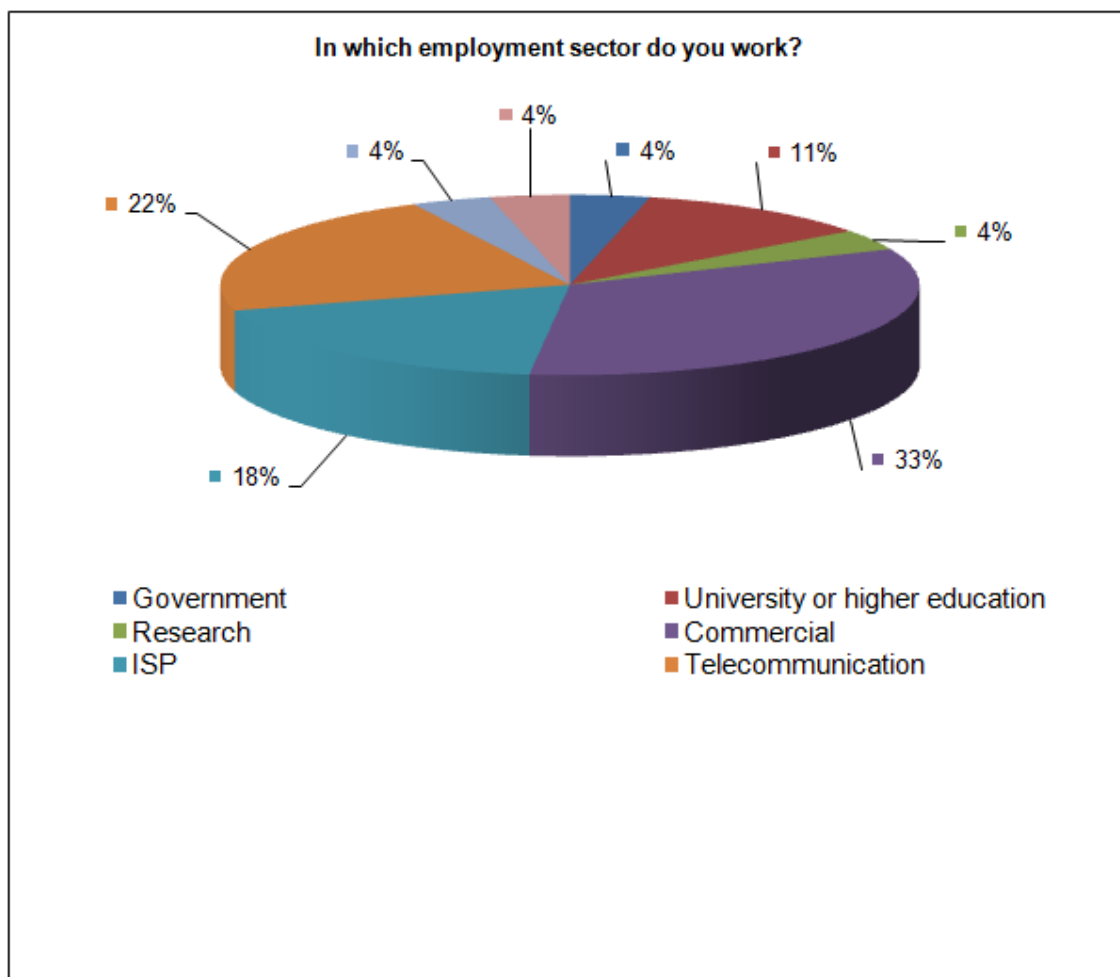


Figure 6-3: In which employment sector do you work?

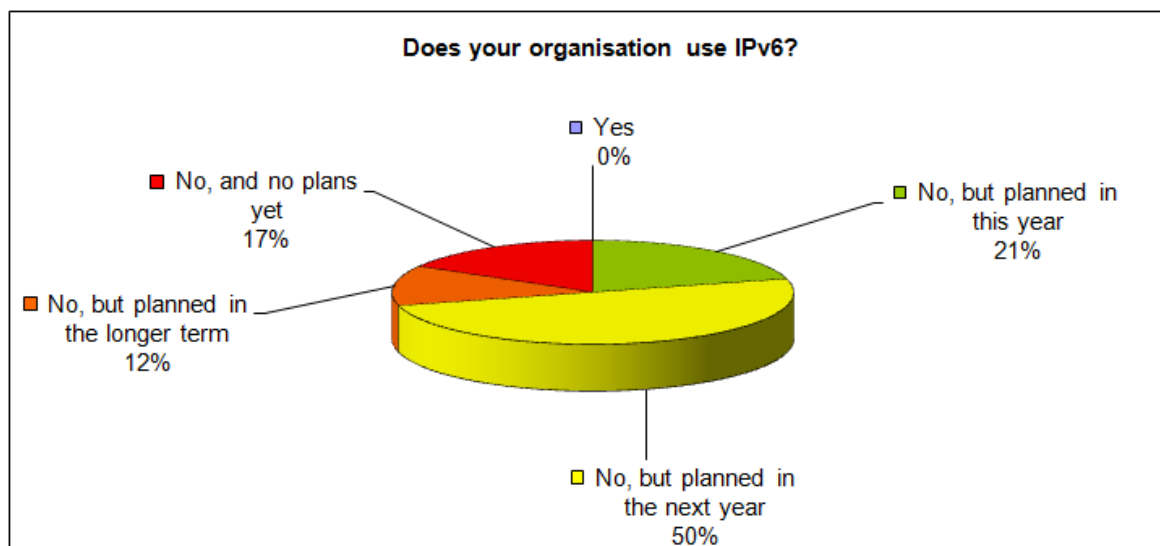


Figure 6-4: Does your organisation use IPv6?

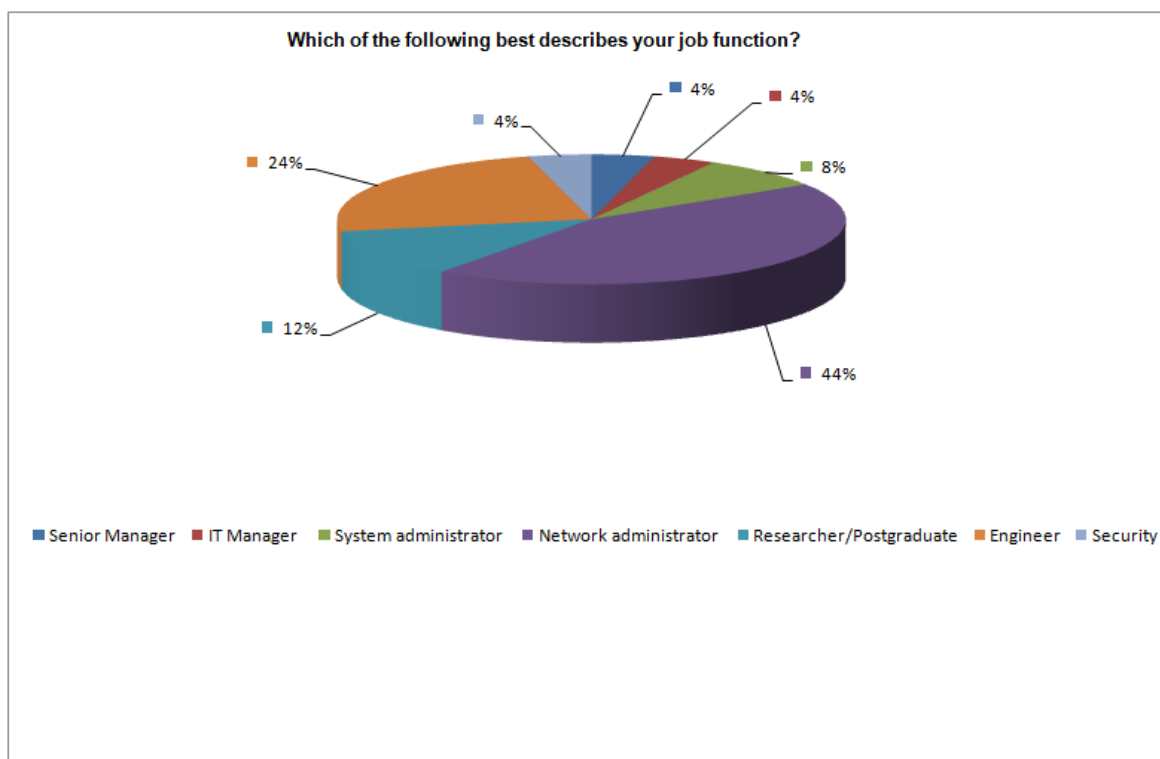


Figure 6-5: Which of the following best describes your job function?

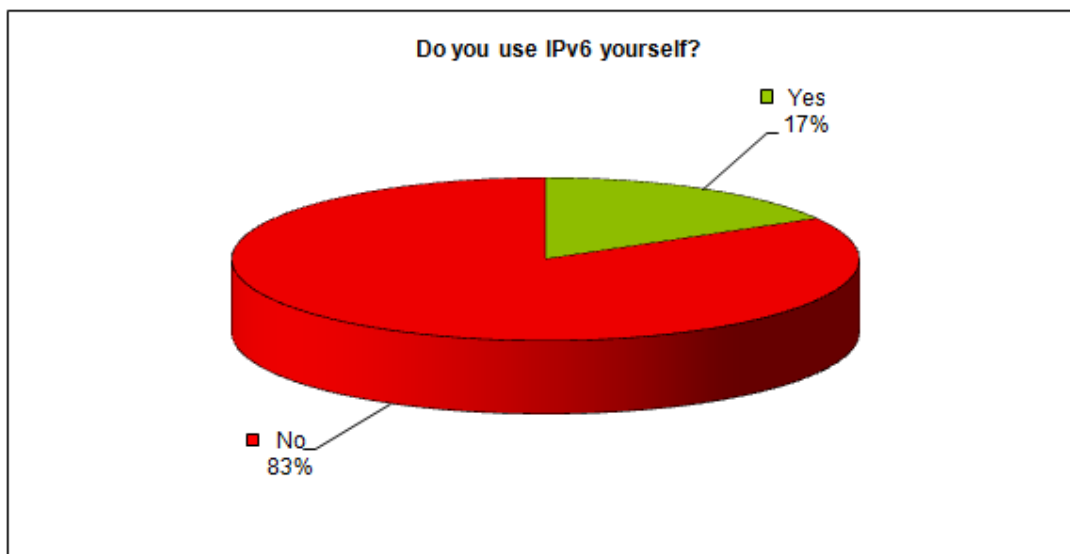


Figure 6-6: Do you use IPv6 yourself?

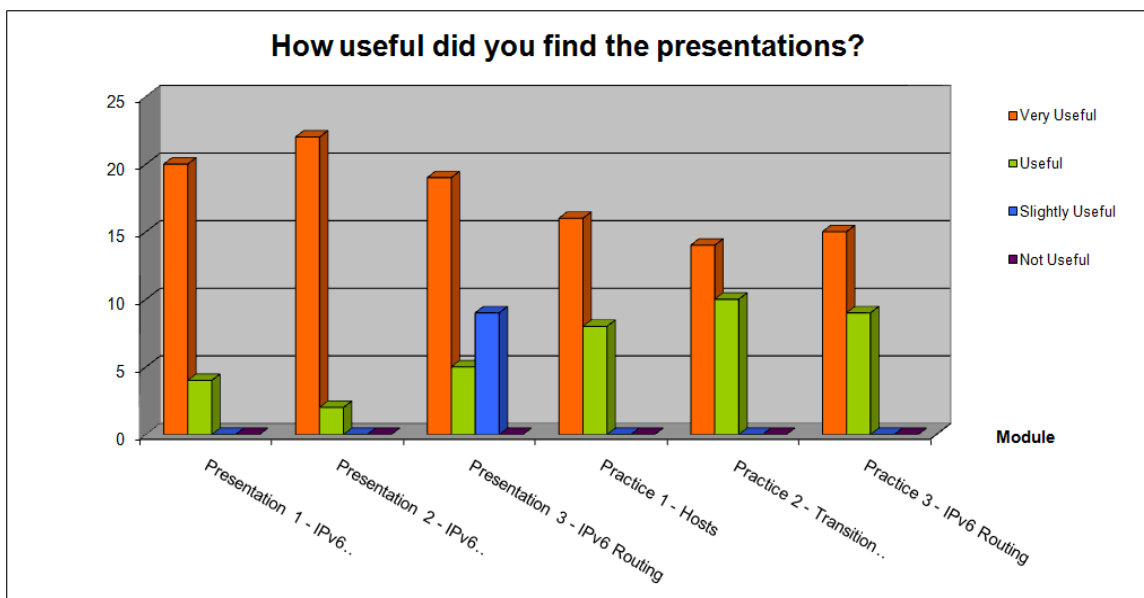


Figure 6-7: How useful did you find the presentations?

How well were the sessions presented?

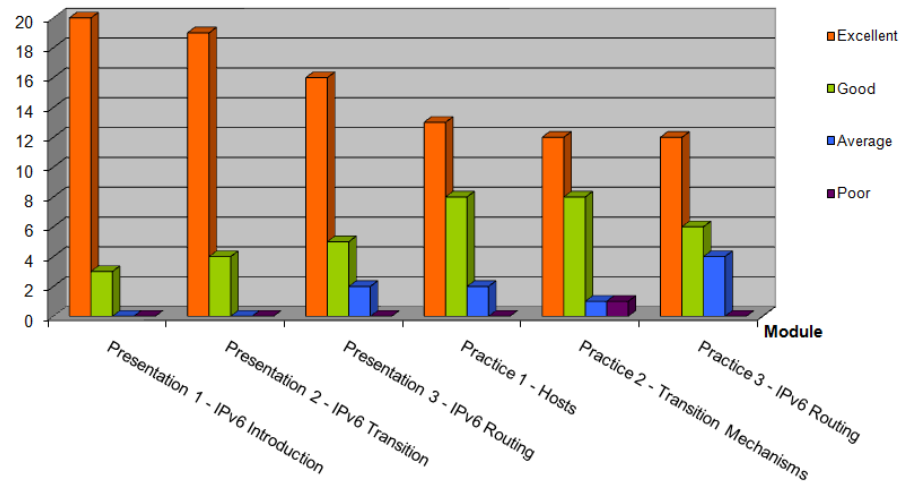


Figure 6-8: How well were the sessions presented?

How much of the workshop material was already familiar?

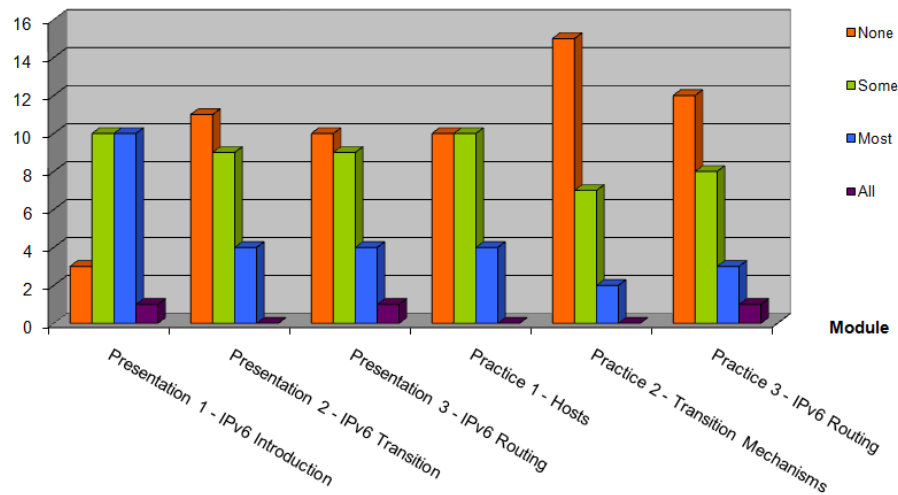


Figure 6-9: How much of the workshop material was already familiar?

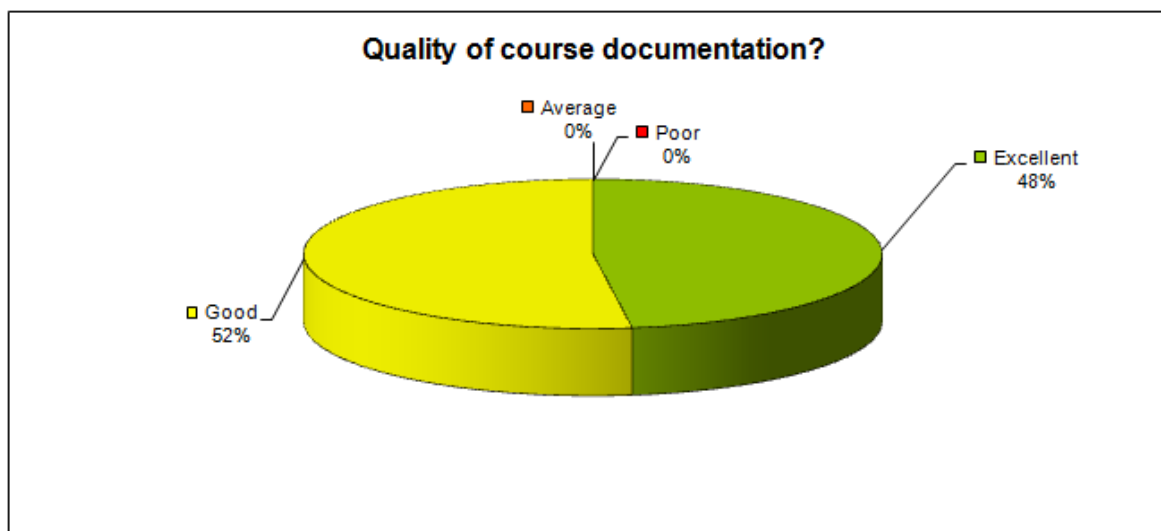


Figure 6-10: Quality of course documentation?

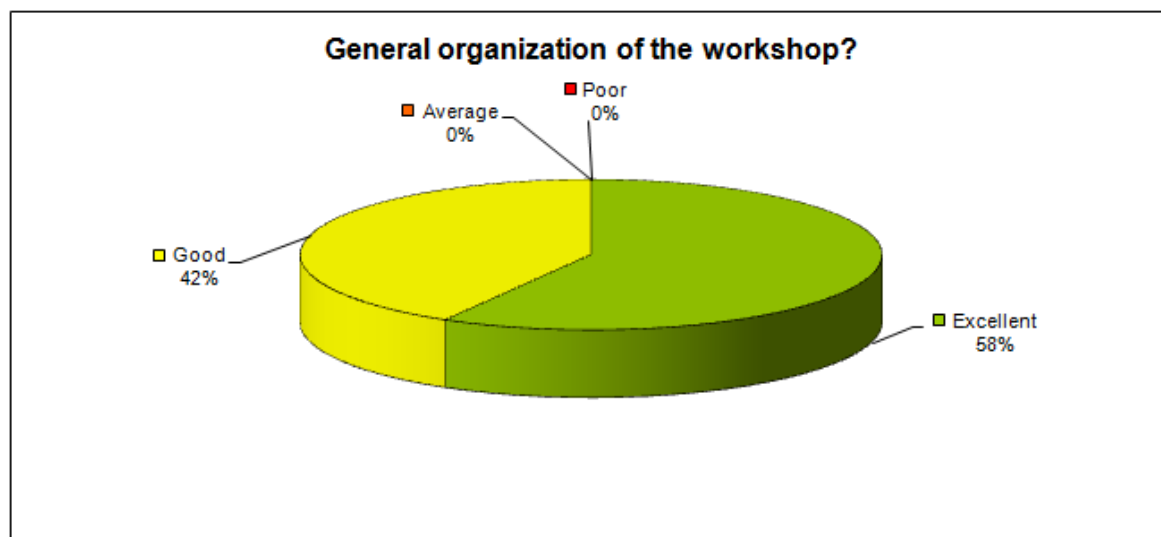


Figure 6-11: General organization of the workshop?

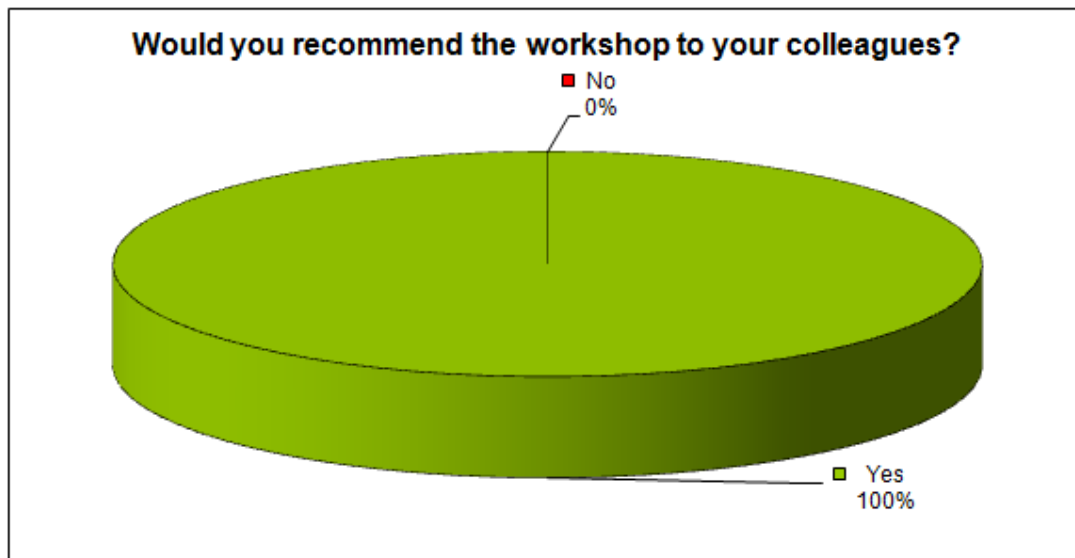


Figure 6-12: Would you recommend the workshop to your colleagues?

6.6.4 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.

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**?:*

- (2) *MPLS.*
- (2) *Load balancing mechanisms.*
- (1) *Teredo and 6to4, other transition mechanisms.*
- (2) *IPv6 Security.*
- (1) *IPv6 behaviour at LAN level.*
- (1) *Neighbor discovery.*
- (1) *Addressing plan.*

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- (1) *Transition planning.*
- (1) *Application migration.*
- (1) *BGP politics for ISPs announcing IPv6.*
- (1) *IPv6 on mobile phone operators.*
- (1) *Subnetting.*
- (1) *More labs and more complex.*
- (1) *Implementing DNS.*
- (1) *Multicast.*

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

- (1) *DNS.*

*Any **other comments**:*

- (5) *Excellent workshop!*
- (1) *It would be good to know about other fixed and mobile operators' experience implementing IPv6.*
- (1) *Practice documents to be editable to be able to fill the missing info.*

End of the excerpts ==

7. 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.

8. 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.

The four workshops reported in this document took place during July and August 2010. All of these workshops were coordinated by LACNIC, as a 6DEPLOY representative, with local authorities and collaboration with Consulintel. Thanks to 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 routing issues.

Approximately 156 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 LAC region, though this is only the first of many steps towards the deployment of real IPv6 networks and services in the region.

9. 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>