


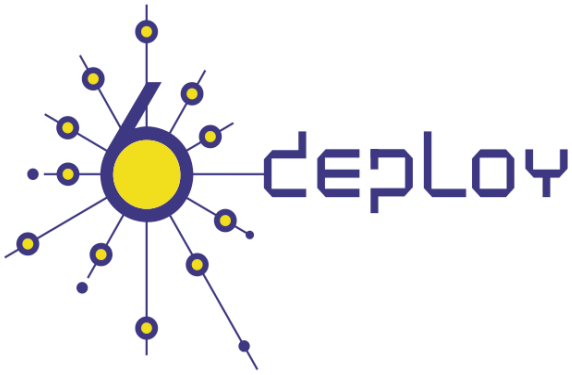

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Abstract:

This deliverable presents a report from the workshop held in Bangkok (Thailand) on 23rd - 24th August 2010. 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, AP, Training, Testbeds, Modules, 6DISS, 6DEPLOY, Hands-on exercises

Disclaimer

Revision History

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

Revision	Date	Description	Author (Organization)
v0.1	2/09/2010	Document creation	Alvaro Vives (Consulintel)
v0.2	20/09/2010	Added missing information	Alvaro Vives (Consulintel)
v1.0	07/10/2010	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 presents a report from the workshop held in Bangkok (Thailand) on 23rd - 24th August 2010. 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 assessment of the opportunities for further co-operation and follow-up actions planned, and e) an analysis of the feedback questionnaires from the participants.

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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:

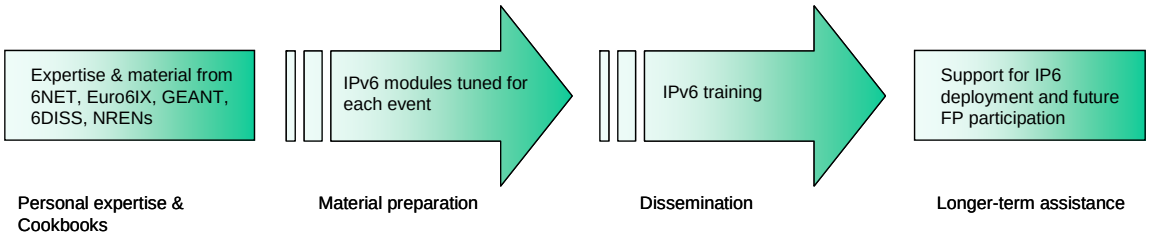

Figure 1-1: 6DEPLOY methodology (diagrammatically)

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 presents a report from the workshop held in Bangkok (Thailand) on 23rd - 24th August 2010. The workshop comprised both slide presentations and hands-

on exercises.

Chapter 2 of this document explains the general motivation for running IPv6 workshops, and chapter 3 describe the specific details of this workshop, in terms of the attendees, the modules that were presented, and the “hands-on” exercises that were performed. Chapter 4 identifies opportunities for further collaboration in the region and follow up actions, Chapter 5 summarises the analysis of the feedback questionnaires that were filled in by the participants, and Chapter 6 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 BANGKOK (THAILAND)

This IPv6 Workshop was held in Bangkok (Thailand) on 23rd - 24th August 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=20100823_bangkok

3.1 Overview

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

An introduction to IPv6 was given. 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. In addition, hands-on exercises were carried out using hosts on a local network.

3.2 Attendees

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

No.	First name	Surname	Affiliation
1	Santi	Panprasertkul	* Anet co. Ltd.
2	Jaranya	Hasuwannakij	*TOT
3	Assana	Lohwitthee	*TOT
4	Komkrit	Narksap	*TOT
5	Somkiat	Pipatsirichai	*TOT
6	Tumma	Tantipalgul	*TOT
7	Kanmanee	Kulwanich	*TOT
8	Suppamongkol	Wongprasirt	*TOT
9	Woraniti	Limpakom	*TOT
10	Sirirak	Siriraksophon	*TOT
11	Sombulrat	Nunrata	*TOT
12	Phasvij	Intarateth	*TOT
13	Chananchai	Amornsawadwattana	*TOT
14	Rak	Sawantham	*TOT
15	Pongsak	Trivilawan	*TOT
16	Pongsak	Nangnoi	*TOT
17	Surachet	Sripolkrang	*TOT

Table 3-1: Bangkok (Thailand) 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
23/8/2010	9:00	IPv6 Basics
24/8/2010	9:00	IPv6 Startup

Table 3-2: Bangkok (Thailand) 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: Bangkok (Thailand) 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 Photographs taken at the event

Figure 3-1: Attendees to the workshop

Figure 3-2: Attendees to the workshop

4. 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.

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.

5.1 General questions related to participants and IPv6

About the participants 17 participants were present, 8 questionnaires were returned		
Employment sector	Government	3
	University or other higher education	1
	Schools or further education	0
	Research	3
	Health	0
	Commercial	1
	Other (please specify)	(2)*
Job function	Government Advisor	0
	Senior Manager	1
	IT Manager	3
	Systems Administrator	2
	Network Administrator	4
	Researcher / Postgraduate	1
	Undergraduate	0
	Other (please specify)	(0)*
Usage of IPv6		
Do you use IPv6 yourself?	Yes	2
	No	1
Does your organisation use IPv6?	Yes	1
	No, but planned in this year	4
	No, but planned in the next year	1
	No, but planned in the longer term	0
	No, and no plans as yet	1

* See the graphics section for more information

Table 5-1: General questions related to participants and IPv6

5.2 Questions regarding the workshop

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

Table 5-2: Questions regarding the workshop

5.3 Results graphics

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

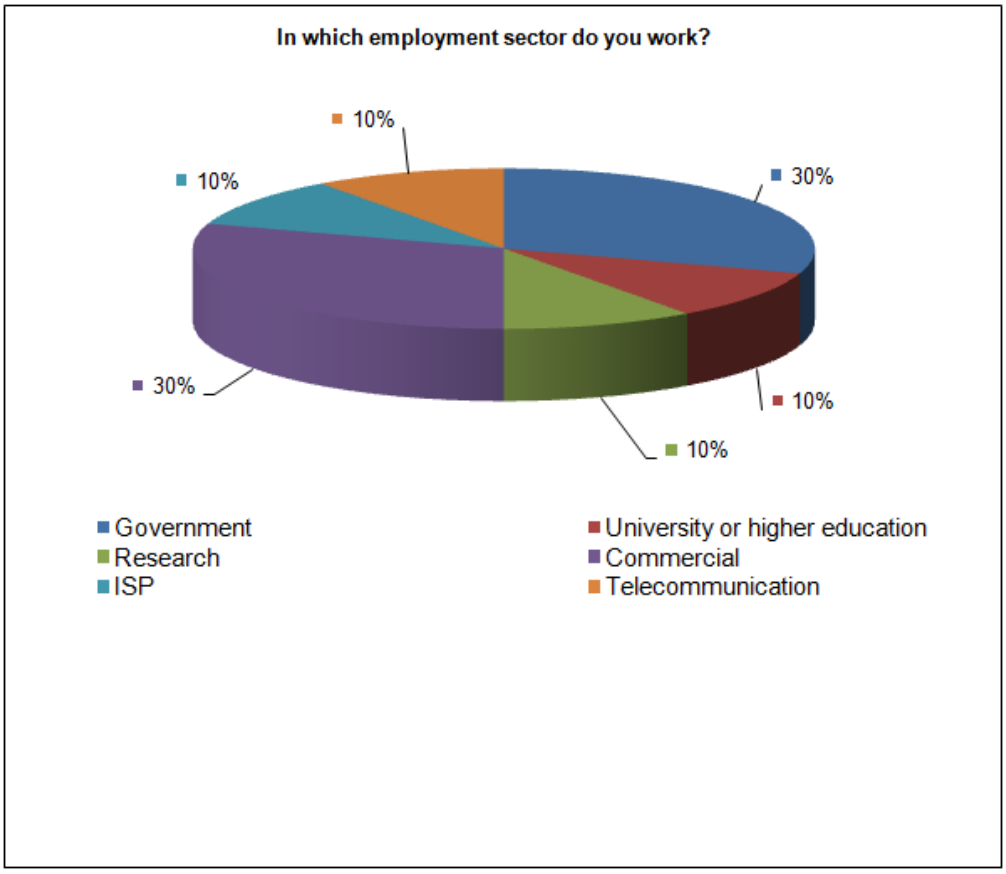

Figure 5-1: In which employment sector do you work?

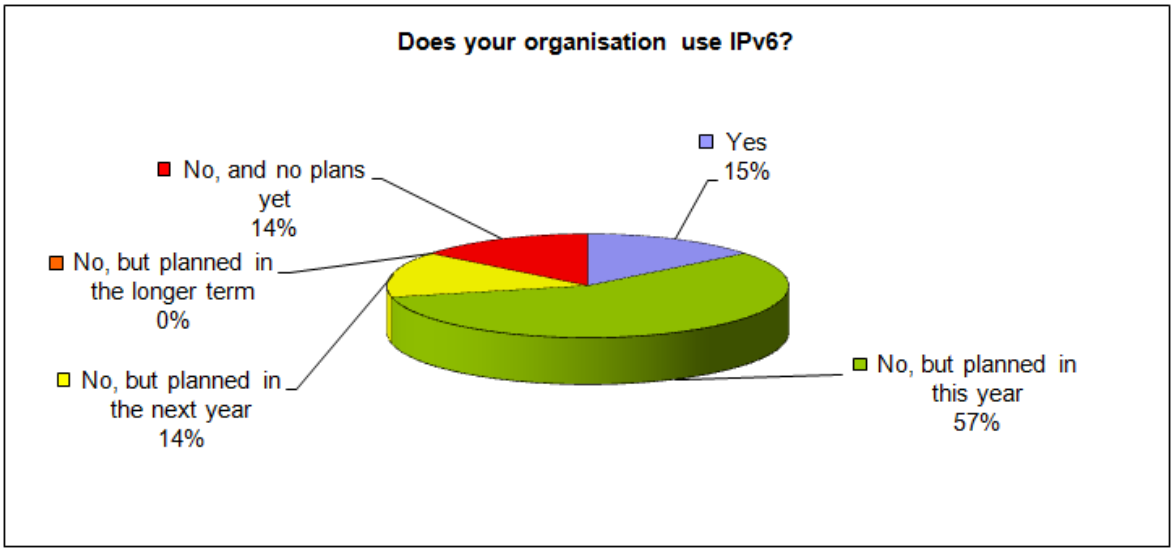

Figure 5-2: Does your organisation use IPv6?

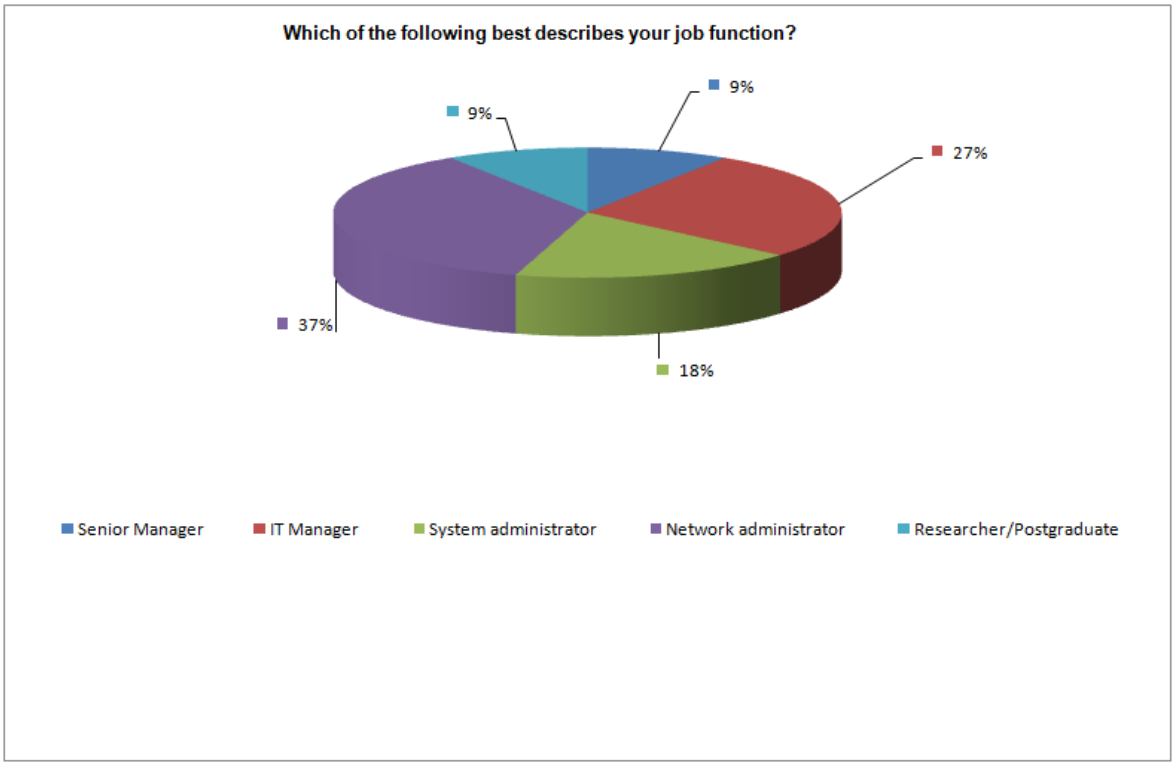

Figure 5-3: Which of the following best describes your job function?

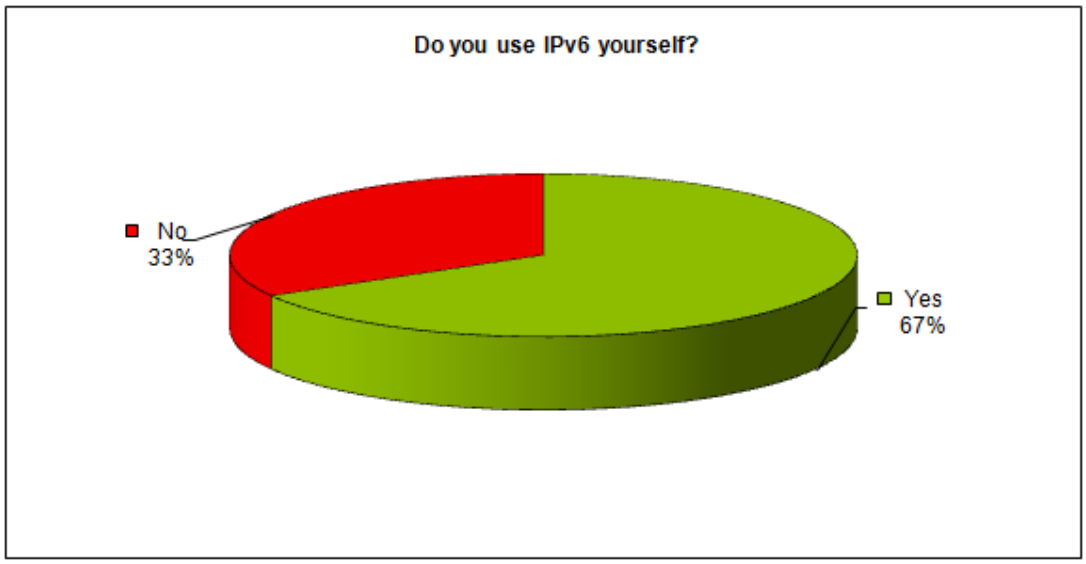

Figure 5-4: Do you use IPv6 yourself?

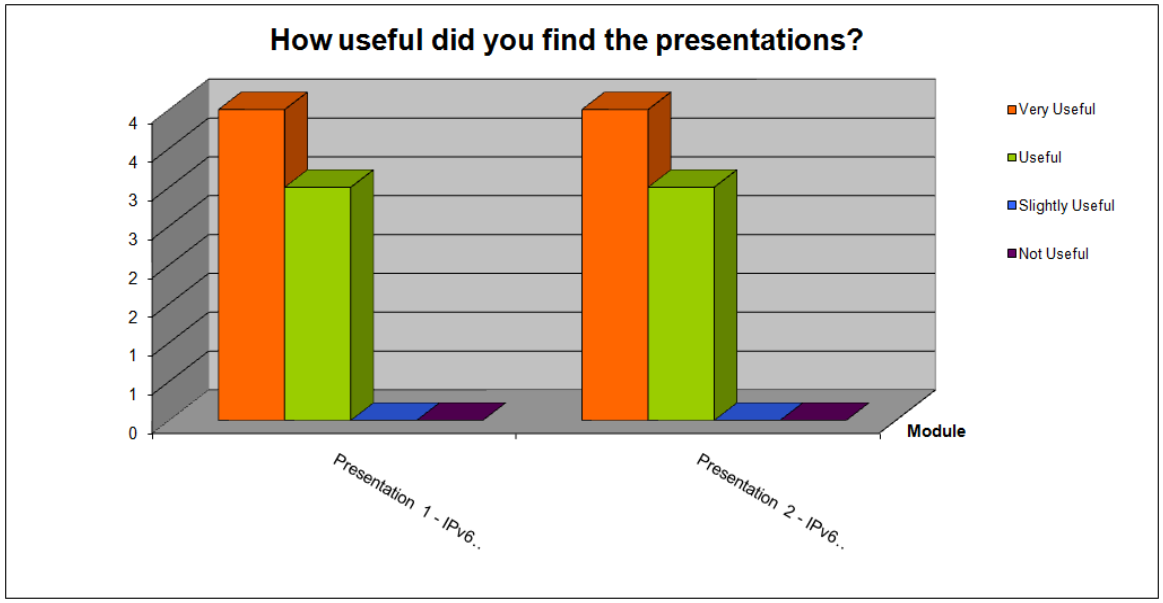

Figure 5-5: How useful did you find the presentations?

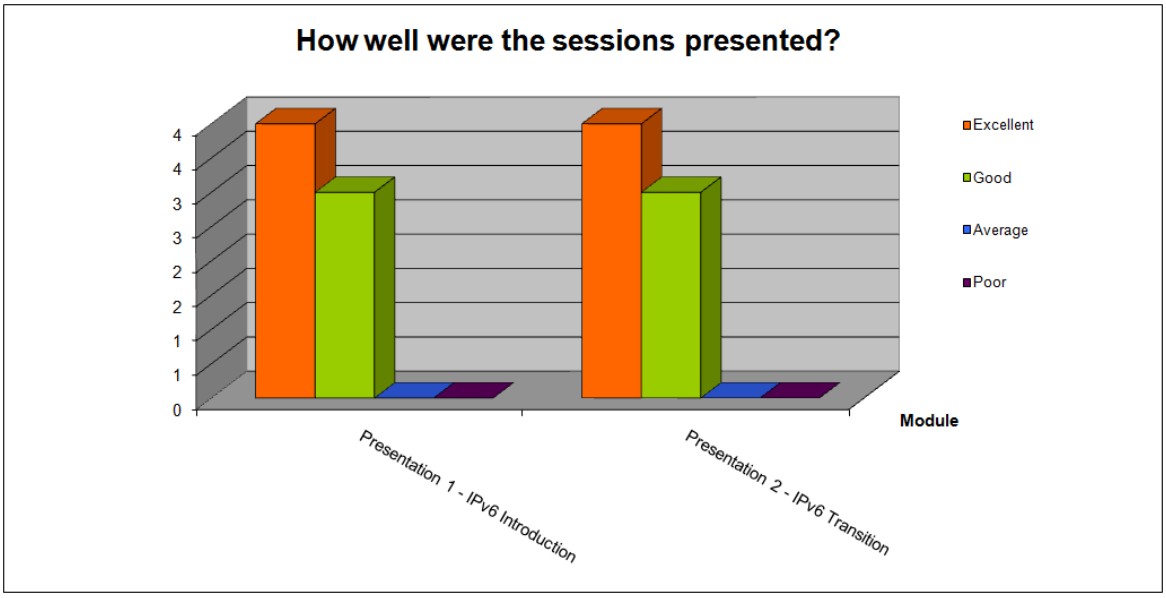

Figure 5-6: How well were the sessions presented?

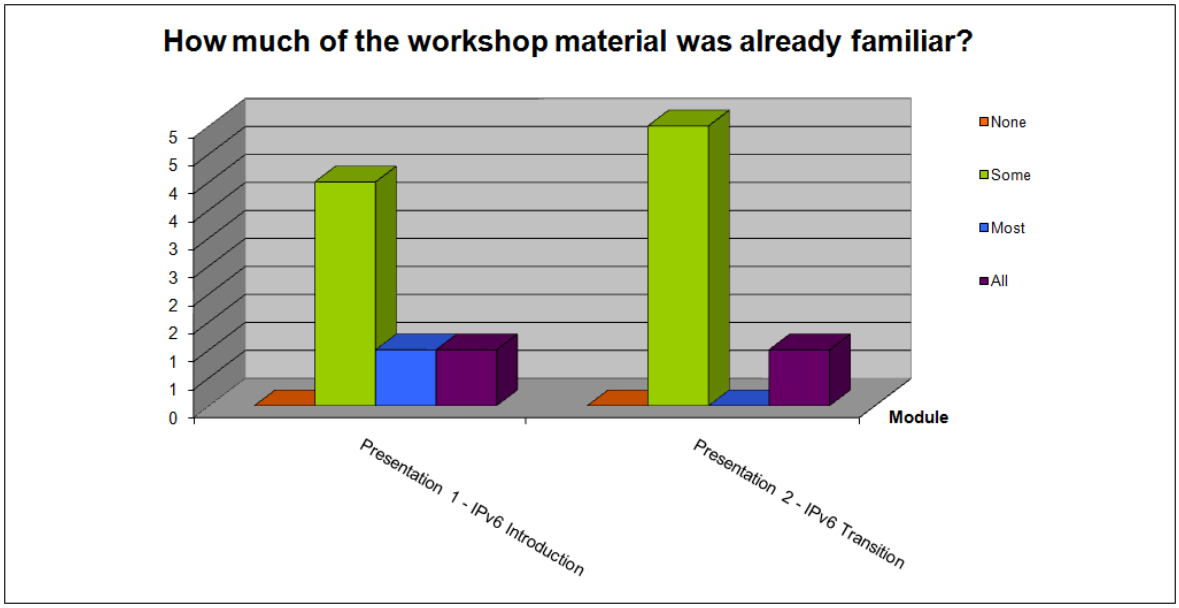

Figure 5-7: How much of the workshop material was already familiar?

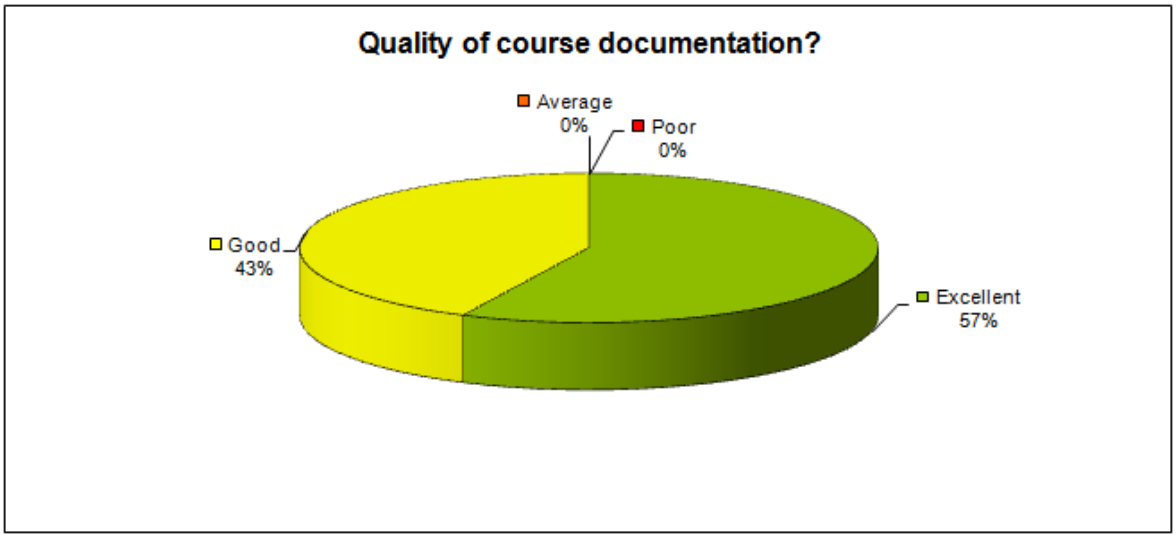

Figure 5-8: Quality of course documentation?

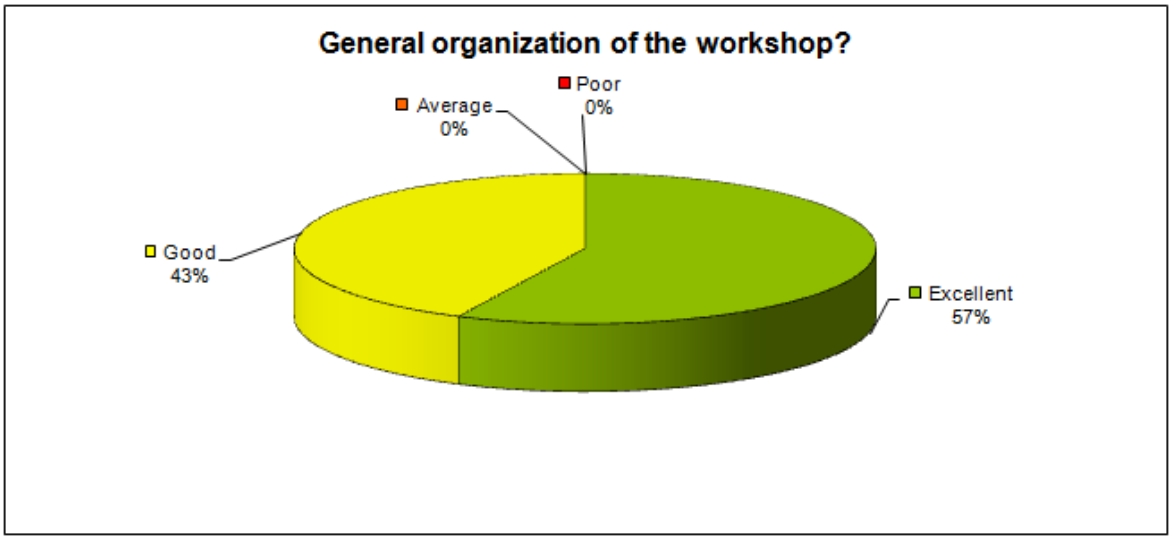

Figure 5-9: General organization of the workshop?

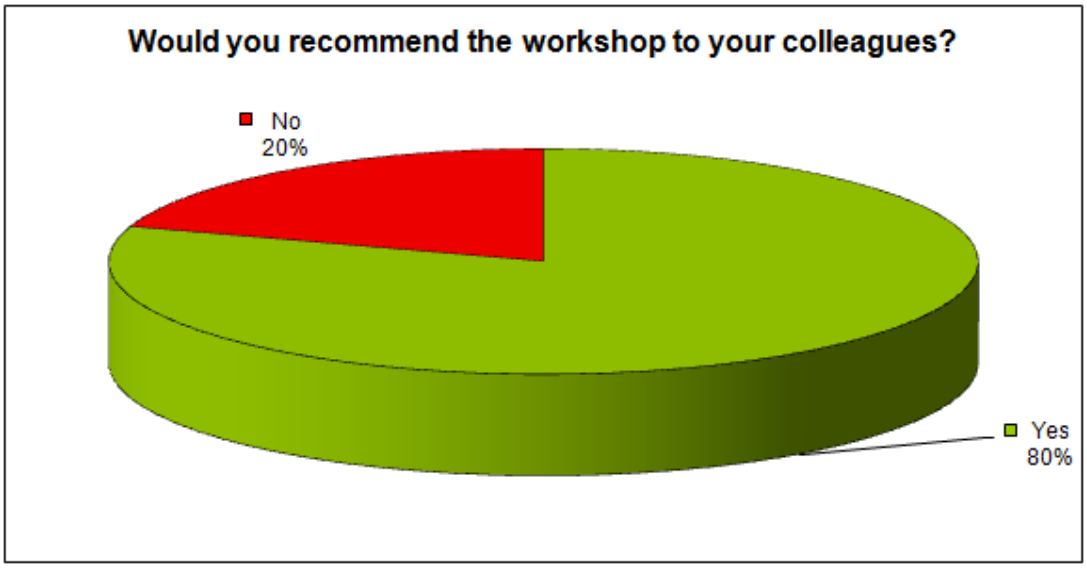

Figure 5-10: Would you recommend the workshop to your colleagues?

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).

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**?:*

- *(3) Transition: steps, procedures, ISP's customers.*
- *(1) IPv6 deploy in more detail (intensive configuration step by step).*

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

- *(1) IPv6 theory.*

*Any **other comments**:*

- *None.*

End of the excerpts ==

6. 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 6DEPLOY workshop took place in Bangkok (Thailand) on 23rd and 24th August 2010. 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, and transition to IPv6.

Approximately 17 network engineers, system administrators, and regulators participated in the workshops. The topics presented were selected according to the participants' requirements, trying to accomplish their need of a more practical workshop.

According to the evaluation forms and the comments from the participants at the workshop, it is clear that the workshop was a success, and that there is significant interest in the region for the IPv6 technology. The participants expressed positive comments on the workshop's usefulness and organisation. They also requested that 6DEPLOY organise more workshops in the region.

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 this part of the AP region, though this is only one of many steps towards the deployment of real IPv6 networks and services in the region.

7. 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