IPv6**DISS**emination and Exploitation

Information Society
Technologies

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6DISS

IPv6 Dissemination and Exploitation

Instrument: SPECIFIC SUPPORT ACTION

Thematic Priority 2

D10: Report on the workshop and status of Internet connectivity in the Caribbean

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Executive Summary

This deliverable is a report from the 6DISS IPv6 technical workshop that took place on 5th - 8th of March 2007 in Gosier (La Guadeloupe). This workshop specifically targeted the countries of the Caribbean region to which RENATER has committed to provide training on IPv6 technologies. The report includes information on the IPv6 workshop programme, the technical presentations and the hands-on training in the local and remote labs. In addition, the report includes dissemination material that has been distributed to the participants, summary of the feedback questionnaire, the analysis of the workshop expenditures and information on the workshop sponsors.

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	✓
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Table of Contents

1. Introduction

This deliverable is a report of the 6DISS IPv6 workshop held in the Caribbean region, which took place on 5th - 8th of March 2007 in Gosier (La Guadeloupe). The workshop especially targeted countries of the Caribbean region, but due to the organisation of parallel conferences in the frame of the IARIA[1] activity, people from Europe and North America were also attending. This report includes information on the IPv6 workshop programme, the presentation and dissemination material distributed to the participants, a summary of the feedback questionnaire attendees filled at the end of the workshop, analysis of the workshop expenditures, and information about the workshop sponsors.

The workshop public web site can be accessed through the following URL: http://www.iaria.org/conferences2007/ProgramICCGI07.html.

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[1] http://www.iaria.org

2. 6DISS workshop in Gosier (Guadeloupe)

2.1. General Information

Most of the previous 6DISS workshop reports have summarized the 6DISS project goals and activities. Therefore, this information has not been included in this report, since first it is now well known and second it is available on the 6DISS web site[2].

The 6DISS workshop in La Guadeloupe was organised by two partners in the framework of the 6DISS project; *RENATER* (leading partner) and *CISCO*. The local organisation was handled in conjunction with the ICCGI2007 (*International Multi-Conference on Computing in the Global Information Technology*) conference, under the umbrella of the IARIA (*International Academy, Research and Industry Association*) series of events. The training workshop was held on 5th - 8th March 2007 and hosted in the *Le Créole Beach* Hotel that provided part of the IARIA conference facilities. It should be remarked that more discussion and explanations than usual were necessary before the logistics for this particular event were understood and properly managed.

English was the official language for this workshop since a lot of attendees couldn't speak French - the local tongue.

Figure 1: Venue

Summary of the details of the 6DISS workshop in Guadeloupe (French Caribbean):

Date: *5-8 March 2007*

Location: *Gosier*

Local organiser: *IARIA*

Lead 6DISS partner: *RENATER*

Supporting 6DISS partner: *CISCO*

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[2] *http://www.6diss.org*

2.2. Attendees

The multiconference organisation resulted in a quite complex agenda for both attendees of the conferences and the 6DISS tutors. The workshop programme had to be inter-leaved with the free time slots of the other conferences. This led to two main issues: 1) a fragmented time schedule, which was difficult to manage, and 2) a "variable" audience – between 4 and 13 people - due to the participation to other conferences tracks (e.g. some of the IPv6 workshop attendees had to chair other sessions or give a presentation). On top of this, the announcement of the IPv6 workshop to the registered people was made very late, resulting in difficulties to forecast how many people would attend and thus how many terminals should be rented, shipped and installed beforehand.

Several lessons were learned, but especially that the 6DISS workshops require a dedicated timeslot of 3 days, that the announcement has to be made in good time, and the participants have to respect the commitment to attend the sessions.

The attendees were mainly researchers in computing sciences and two of them were ISPs.

The majority of the trainees had only limited practical experience with the IPv6 technology. However, most of the trainees had a good understanding of IPv4 protocols and network services. A few of them were lacking experience in network operation, though.

Figure 2: Trainees and tutors working …

2.3. Programme outline

The agenda was agreed in close collaboration with the "local" organisers from the IARIA, and dedicated set up and configuration exercises were created for this workshop. The meeting agenda and the related material were submitted in advance, so that the organisers could insert all the documents in the conferences proceedings. On the logistics side we had to deal with a new way to install and configure the lab equipment, due to the fact that the Brussels remote lab was not available for this event. To compensate for this remote equipment unavailability, six small C1800 series routers were shipped to Guadeloupe and installed and configured by a Cisco engineer.

The programme of the workshop is presented in the following screen shots:

Session Programme /2

Tuesday, March 6th 2006		
10:30	Autoconfiguration protocols for IPv6	Simon
11:00	LAB-2: Autoconfiguration and Packets analysis (*S, *A)	Stig
12:15	Lunch Break	
13:45	LAB-2b: routers IPv6 addresses configuration	Stig
15:30	End of Day #3	

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Session Programme /3

Wednesday, March 7th 2007		
10:30	Routing protocols for IPv6	Bernard
11:00	LAB-3: IGP & EGP configuration	Simon
12:15	Lunch break	
13:45	LAB-3: cont'd	Simon
14:30	DNS for IPv6	Bernard
15:00	IPv6 Applications	Stig
15:30	Break	
15:45	LAB-4: DNS & applications configuration	Stig
17:00	Managing IPv6 networks	Simon
17:30	End of day #3	

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The following link hosts the presentations and the hands-on material used during the workshop: http://www.6diss.org/workshops/carib/. This link was further used to help workshop organisers in other countries or regions to build up their own programme (e.g. in Rabat, Morocco)

2.4. Presentation material

The theoretical presentations were based on the available 6DISS modules which have been updated with the most recent information available on every topic. The list of modules that were used is the following:

- Introduction to IPv6

- IPv6 Associated Protocols

- IPv6 Addressing

- IPv6 Addressing case study (RENATER)

- IPv6 Autoconfiguration

- IPv6 Routing Protocols

- IPv6 DNS

- IPv6 Integration

- IPv6 Management

- IPv6 Applications

Responsible for the technical presentations and the hand-on sessions were:

- Simon Muyal (RENATER)
- Bernard Tuy (RENATER)
- Stig Venaas (UNINETT)[3]

2.5. Workshop labs

The "hands-on" sessions used a local set of laptops and routers.

The local lab, which consisted of 10 laptops, was used for exercises on hosts and servers (Figure 3). Windows Vista[4] and Linux operating system (Ubuntu) were used to support the exercises related to basic IPv6 configuration, usual network services, and management tools.
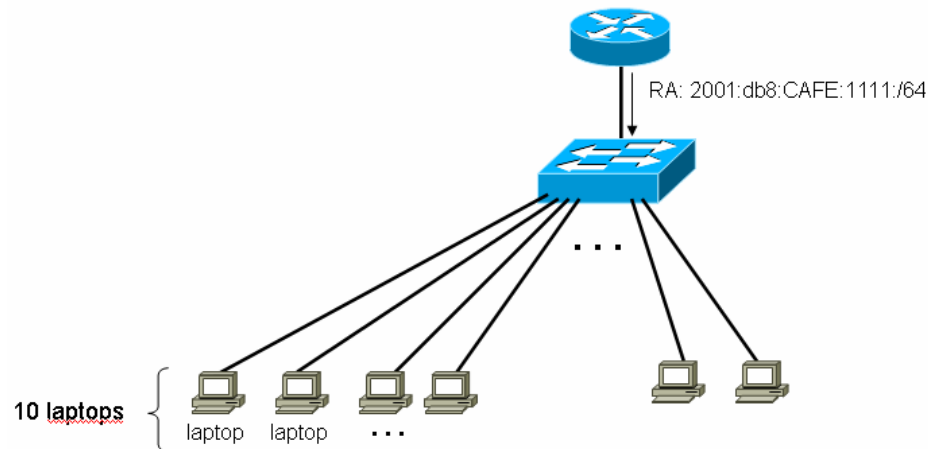

Figure 3: PC lab – Physical topology

Internal (OSPFv3) and external (BGP) routing protocols exercises were run on the local set of Cisco 1800 series (Figure 4) and on the remote lab in Paris (Figure 5).

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[3] *Mr Venaas offered to help for the IPv6 workshop in Guadeloupe. He was partner of the 6NET project and is still deeply involved in IPv6 multicast protocols and applications.*

[4] *It was our first experience with the new Microsoft operating system ... the configuration actions were checked one day prior the workshop started.*
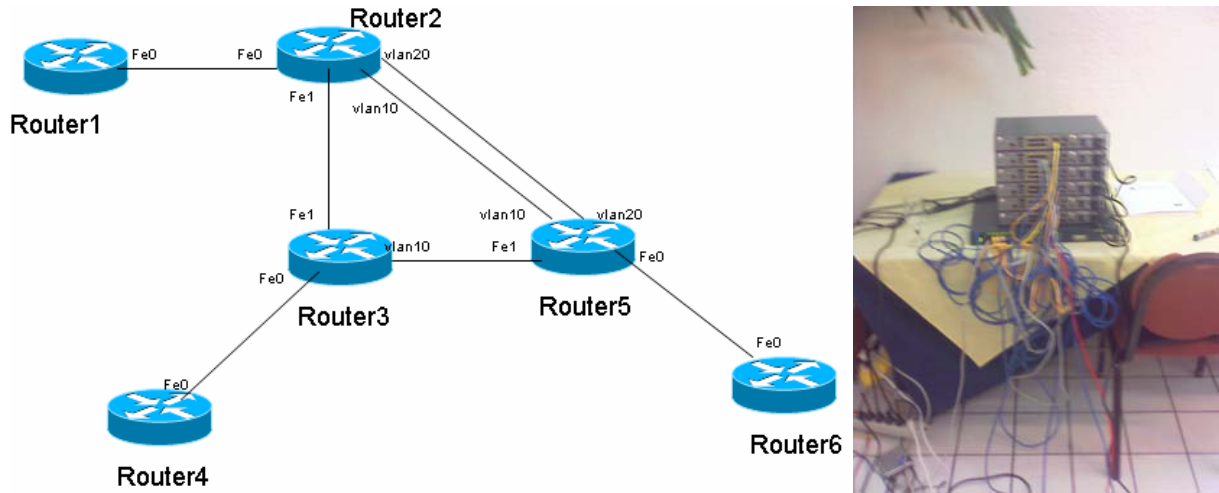
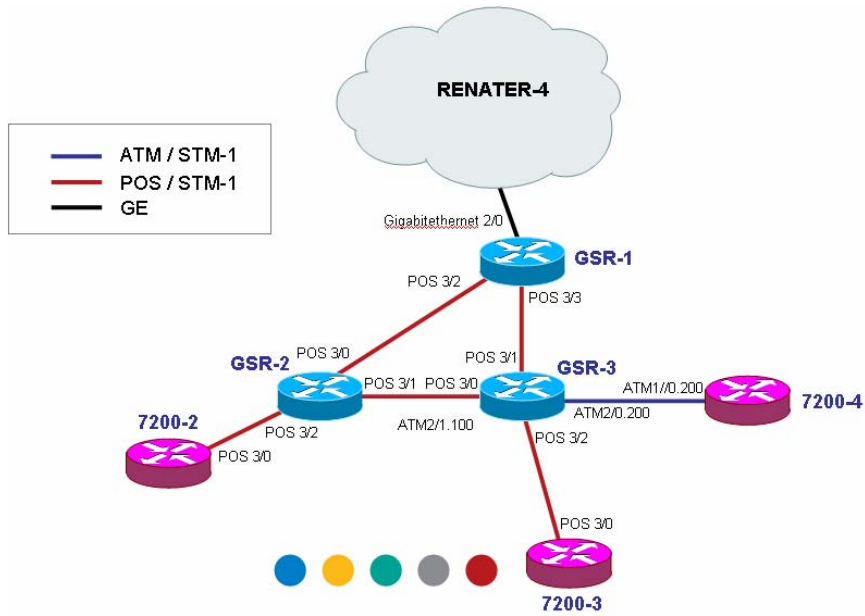**Figure 4: Local lab topology - Routing information**

Figure 5: Remote (Paris) lab topology

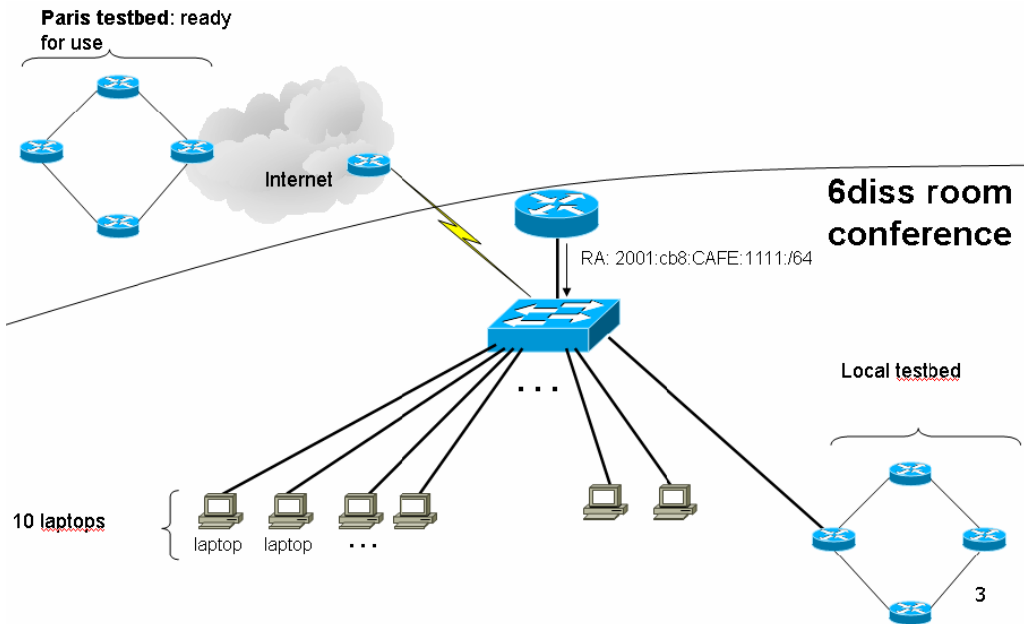The global lab topology is depicted in figure 6 below:

Figure 6: Global equipment topology in Guadeloupe

2.6. Workshop CD-ROM and Diplomas

Multiple IPv6-related technical presentations and documents from many events that 6DISS has already contributed to, in addition to open-source IPv6-ready applications, were compiled onto a CD-ROM and freely distributed to the participants at the end of the workshop. 6DISS partners have gathered together as much IPv6 information as possible, in order to provide reference material for the engineers willing to work with IPv6 in their region, without needing to seek the relevant information across the Internet. This is particularly useful when trying to build a network, prior to having any Internet connectivity.

The contents of the 6DISS IPv6 CD-ROM included:

- Many IPv6 electronic books such as the 6NET cookbook, IPv6 ABCs by Cisco, etc.

- 6NET technical documentation (6NET deliverables), such as basic and advanced services, applications, transitioning, management, etc.

- Workshop presentations used during this workshop: Modules and "hands-on" documents

During the gala dinner, "diplomas" were given to the IPv6 workshop participants who attended the session until the end and completed most of the exercises proposed by the tutors.

2.7. Sponsors

IARIA: the International Academy, Research and Industry Association welcomed the idea of organising a IPv6 workshop in parallel with the other conferences they had planned in Guadeloupe. IARIA took charge of most of the logistic aspects (PC shipments, room booking, video-projector …). These services were invoiced to 6DISS (via RENATER)[5].

2.8. Summary of Costs

The expenditure details covered by 6DISS for the organisation of this workshop are shown in the table below. The overall cost was €10.340. [6]

Description	Expenses (In €uros)	Comments
Organisation	2´600	Meeting rooms, local equipment and services
Registration fees for 6DISS members	1´500	
Lab equipment for trainees	6´240	Equipment configuration, rental and shipping

Table 2: Expenditure details for the workshop organisation

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[5] *At the time of writing, the expenses are still under discussion, because we (6DISS partners) got the clear feeling we were claimed to high expenses compared to the service we actually got…*

[6] *A 20 k€ provision budget was reserved for every workshop local organisation. To be sure this budget isn't unduly overspent, half of it was kept secret …*

3. Opportunities for further Co-operation

3.1. Follow-up actions

The attendees were informed on how to keep contact with the 6DISS partners for any questions they may have regarding IPv6 deployment, addressing plan, … To this respect, the role of the so called *Tiger Team* was explained as being the way to submit questions. This team can be contacted via a mailing list composed by volunteers, who are available to answer (or forward) any kind of questions, requests, related to IPv6 deployment and configuration.

TERENA had contacted the University of the West Indies, who were also keen to host this workshop. It is an opportunity that will be followed up in an extension proposal within FP7.

4. Analysis of the feedback Questionnaire

A questionnaire has been especially designed to get feedback from the participants, regarding the suitability of the course material and the tutors, to convey the information, and the relevance of the information delivered to the expectations of the attendees.

4.1. Participants Comments

It should be noted that the participants had different technical backgrounds.

== Begin of the excerpts

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

- Mobile IPv6 (2 people), hierarchical Mobile IPv6 (HMIPv6) and Fast Handover MIPv6 (HMIPv6)
- IPv6 Security (versus IPv4 security)
- More practical/hands-on

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

- All topics appear useful
- None

3. Any other comments:

- Hands-on: Explanation with the answers could be printed out. It would be easier to follow the hands-on (e.g. Cisco commands, etc.)
- Great Workshop

== End of the excerpts

5. Conclusion

Workshops are a key mechanism through which information, knowledge and know-how are transferred to less experienced countries. The workshops enable to build constituencies and raise awareness; disseminate, benchmark and validate the research results from IST; promote European technologies; exchange best practices; and explain about activities related to standards and interoperability issues.

RENATER led the 6DISS workshop in Guadeloupe and was supported by Cisco. The 6DISS IPv6 workshop took place on 5th - 8th March, 2006 in Gosier. IARIA organised the venue and provided the workshop with all the logistics needs. Up to 13 researchers and ISP staffs participated in the event. The topics to be presented were selected according to the organisers' requirements.

The set of dissemination material included most of the issues of Internet deployment and evolution; especially IPv4-IPv6 transition/co-existence strategies, DNS, Autoconfiguration, Routing, Monitoring and Management tools, and Applications. The participants expressed positive comments on the workshop usefulness and organisation.