



GISELA

NETWORK RESOURCE PROVISION ASSESSMENT OF THE 2^N^D YEAR

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Abstract: This document presents the achievements of the Work package WP5 - *Network Resource Provision* - during the second year of the GISELA project (*Grid Initiatives for e-Science virtual communities in Europe and Latin America* - <http://www.gisela-grid.eu/>).



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1. INTRODUCTION

1.1. PURPOSE OF THE DOCUMENT

This deliverable provides an assessment of the Work Package 5 (WP5) achievements during the second year of the GISELA Project.

For a comprehensive view of the Project and of the GISELA Consortium, the Description of Work (DoW)¹ and the Consortium Agreement (CoA)² should be consulted.

1.2. DOCUMENT ORGANISATION

An executive summary is presented in Section 2. The WP5 achievements are shown in Section 3. The current WP5 human resources are provided in Section 4. Conclusions are the object of Section 5.

1.3. APPLICATION AREA

The target audience for this document is:

- The members of the Project;
- The European Commission Services;
- The Project Reviewers;
- The CLARA community;
- The External Advisory Committee (EAC);
- The general public.

1.4. DOCUMENT AMENDMENT PROCEDURE

Amendments to this document can be requested by any Project Member to the Project Coordinator, via the Project Office (hlp-gisela@hlpdeveloppement.fr).

1.5. GLOSSARY

CLARA	Latin American Cooperation of Advanced Networks
CoA	Consortium Agreement
DoW	Description of Work
FQDN	Fully Qualified Domain Name

¹ <http://documents.gisela-grid.eu/record/32?ln=en>

² Consortium Agreement (CoA) available upon request to the GISELA Project Office (hlp-gisela@hlpdeveloppement.fr)



**NETWORK RESOURCE PROVISION
ASSESSMENT OF THE 2ND YEAR**

Document Full Name

GISELA-D5.3-v1.4

Date: 31/08/2012

GT-Mediciones	Task Force for monitoring services of CLARA
HLP	HLP Développement SAS (France)
LA	Latin American (or Latin America)
MonGISELA	Network Monitoring Service of GISELA
MP	Measurement Point
NREN	National Research and Education Network
NSC	Network Support Centre
RC	Resource Centre
WP	Work package
WP5	Network Resource Provision
UDO	Universidad de Oriente - Venezuela
UIS	Universidad Industrial de Santander - Colombia
ULA	Universidad de Los Andes - Venezuela
UTP	Universidad Tecnológica de Panamá - Panamá

2. EXECUTIVE SUMMARY

During the second year of the GISELA project, the activities of the WP5 team centred on the deployment of a monitoring platform and in the installation of a ticket system to manage operation issues and requirements. One of the main components of this monitoring infrastructure is the centralised Web interface that allows the supervision of the network from a single central point.

Using these tools, measurements have been performed in order to determine the performance of the network between several Measurements Points in Latin America. The results have shown that the network offers excellent conditions for jobs submission to the Grid infrastructure.

3. ACHIEVEMENTS

3.1. MEASUREMENT POINTS

One of the key services is the Measurement Point (MP). This service allows setting and executing programmed or on-demand tests between two end points of the Network. Several MPs have been installed in RCs of the GISELA Grid. Table 1 shows the list of the installed MPs in the period comprised between September 2011 and August 2012 (M13 to M24), and their characteristics.

Table 1: Measurement Points installed in GISELA Resource Centres

Country	Institution	FQDN	IP Address
Brazil	Universidade Federal de Rio de Janeiro (UFRJ)	mp.eela.ufrj.br	146.164.137.42
Colombia	Universidad Industrial de Santander (UIS)	servIGALC.uis.edu.co	200.16.117.47
Ecuador	Consortio Ecuatoriano para el Desarrollo de Internet Avanzado (CEDIA)	----	190.15.132.69
Panamá	Universidad Tecnológica de Panamá (UTP)	mp.utp.ac.pa	168.77.8.44
Venezuela	Universidad de Los Andes (ULA)	mp.cecalc.ula.ve	190.168.16.11

3.2. ADMINISTRATION INTERFACE

The interfaces provided by the two flavours of the middleware perfSONAR (Internet2 and MDM) are suitable for network administrators. However, none of them have a general view of the monitored networks. Therefore, during the second year of GISELA, WP5 developed a prototype that includes this feature. This prototype provides both general and detailed views of the Network activity. Besides, it could be used as a central administration interface.

The software architecture of the prototype is composed by several elements. The lower layer consists of the set of Measurement Points installed in the monitoring platform. All MPs can be reached through the interface that is generated using a mapping tool (WheatherMap).

Finally, the interface is installed in a central Web server that constitutes the central service. The architecture of this prototype is depicted in Figure 1.

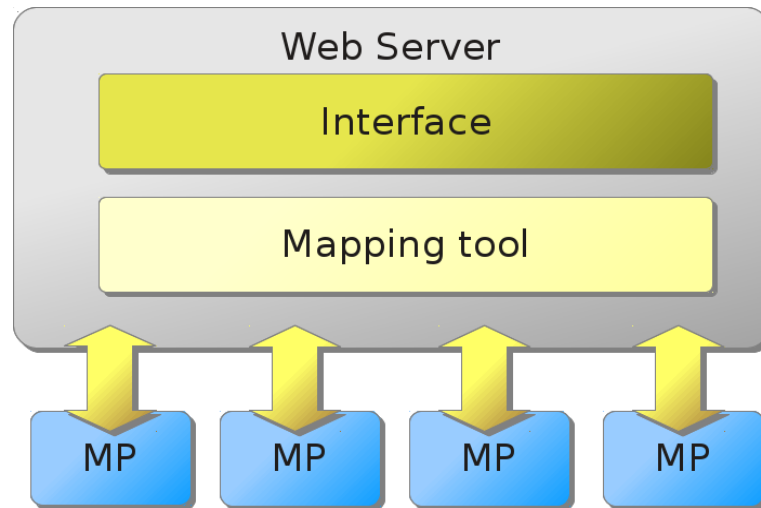


Figure 1: MonGISELA Software Architecture

One can reach this prototype through the following Web link: <http://mongisela.cecalc.ula.ve>

Figure 2 shows the home page of the *MonGisela* prototype.

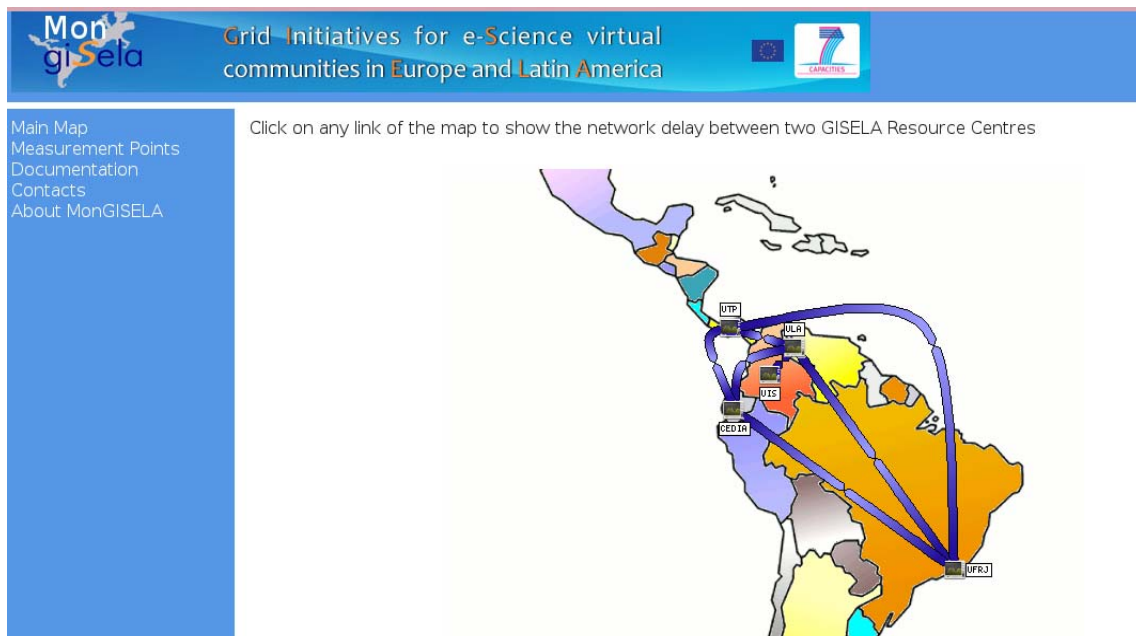


Figure 2: MonGISELA Web Interface

The Web interface shows two main areas: the left menu and the right panel.

- The right panel acts as display area;
- The left menu allows to:
 - Display a map that shows the current set of MPs installed. There are links between them and any user can click on any link to display the graph that presents the metrics of delay and packet losses between the two end points;
 - Display the list of the people in charge of each MP;
 - Display the list of the already installed MPs, which allows reaching any MP directly, clicking either on the FDQN or on the IP address.

3.3. TICKET SYSTEM

A ticket system has been installed to manage the administrative tasks of the platform. The software selected is Request Tracker (RT)³ that provides features like:

- Queues to manage different kind of reports;
- Detailed categorisation of reports;
- Report management via e-mails.

The system is available at <http://giselart.cecalc.ula.ve>. Figure 3 shows this tool.

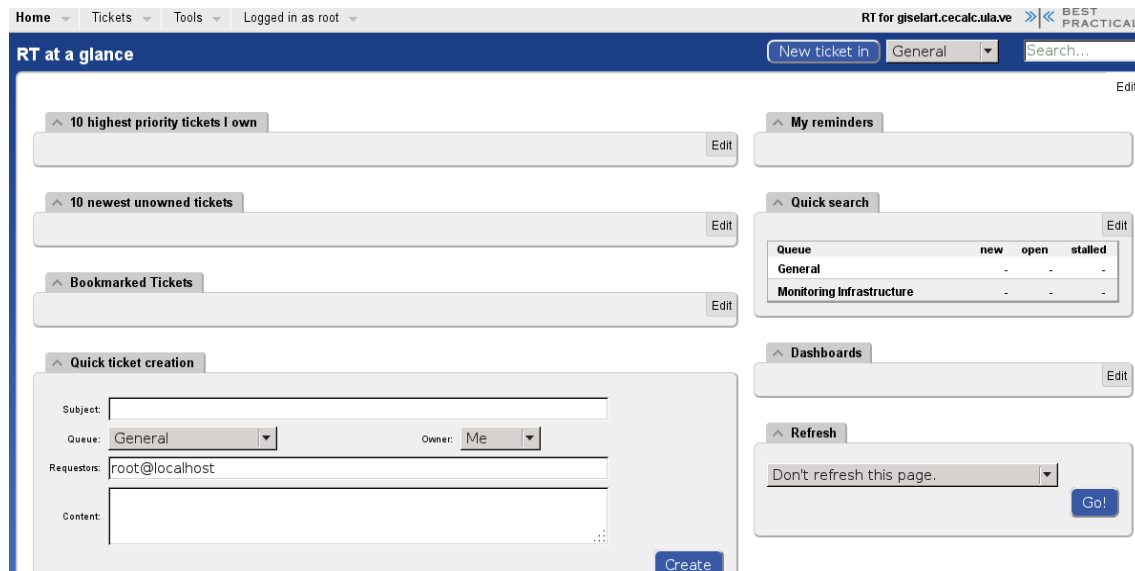


Figure 3: GISELA Request Tracker (GISELART)

³ <http://bestpractical.com/rt/>

3.4. NETWORK PERFORMANCE

Using the implemented prototype, one can obtain real-time graphs of packet losses percentage and delay between RCs. The graphs show the minimum and average delay (blue and red lines, respectively) and the packets lost percentage (black dots) between two end points. It is possible to show the maximum delay and all the metrics in a reverse way. The user can set the period of time of observation. For instance, network performance between three of the RCs where MPs are installed is showed in Figure 4, Figure 5 and Figure 6.

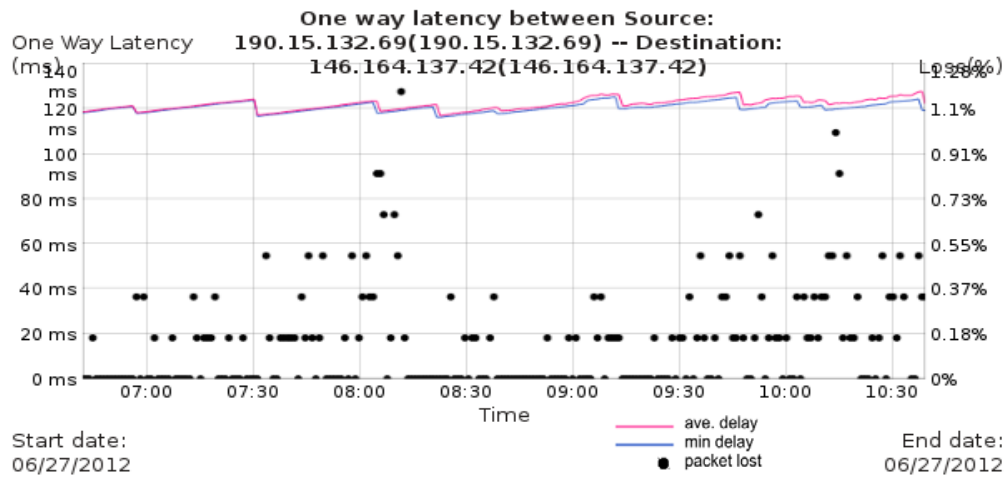


Figure 4: Metrics between UFRJ and CEDIA

Looking at Figure 4, one can see that the average delay is very similar to the minimum delay. One can observe also that these delays have an acceptable value, of approximately 120 milliseconds and that packet losses are less than 1%. Therefore, the network performance between UFRJ and CEDIA can be considered as good.

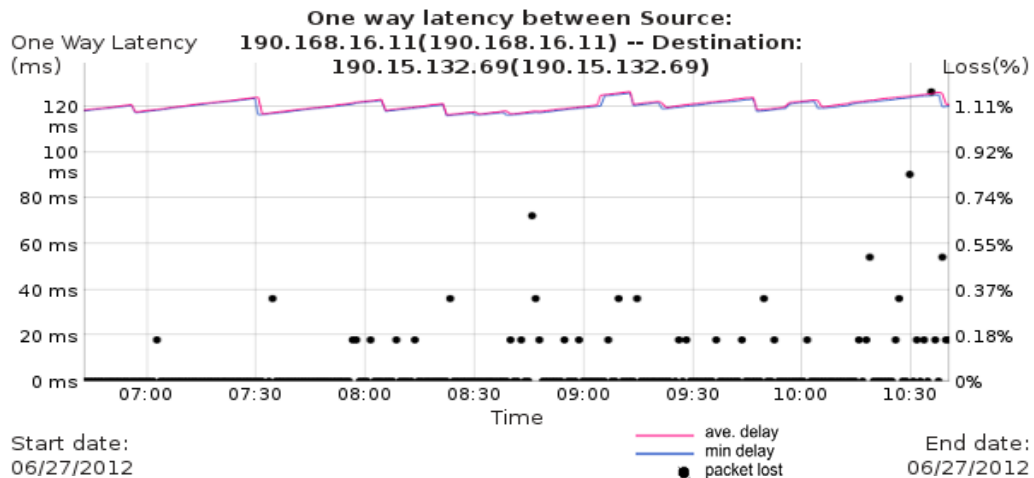


Figure 5: Metrics between ULA and CEDIA

From Figure 5, one can see that, between ULA and CEDIA, there is an acceptable level of the delay (about 120 milliseconds) and that the packet losses percentage is very good.

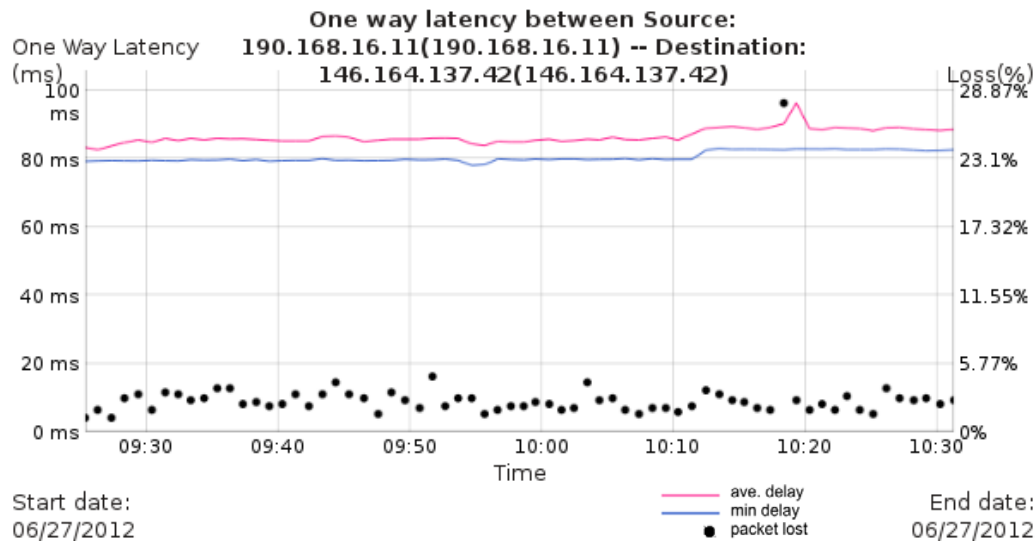


Figure 6: Metrics between UFRJ and ULA

Finally, Figure 6 shows that the performance of the network between ULA and UFRJ is good, with an average delay of approximately of 80 milliseconds but with a packet losses percentage of about 3%.

Similar graphs for UIS and UTP present similar features.

3.5. NETWORK OPERATION PROCEDURES

In order to help network administrators to treat any network issue, a set of procedures have been developed and can be found in the *Network Resource Provision Operating Manual*.⁴

These procedures are based on a set of workflows, each one comprising a specific set of actions for network resource provisioning issues in a Resource Centre (RC).

The network administrator of the RC is responsible for

- Detecting any network problem, attending network and provisioning requests;
- Coordinating the proper actions;
- Starting the follow-up procedure.

The network administrators are also responsible for tracking issues and documenting the solutions. All actions must be coordinated with the corresponding NREN and the Network Operation Centre.

⁴<http://documents.gisela-grid.eu/record/321/files/GISELA-Note-ADM07-WP5-Network%20Operation%20Manual-v1.3.doc>

3.6. OTHER ACTIVITIES

3.6.1. Training Activities

During the second year of the GISELA project WP5 team have contributed with Grid training activities for users and system administrators:

- *Grid Computing School for Users.* Universidad Industrial de Santander (UIS). Bucaramanga – Colombia October 2011.
- *Grid Computing School for System Administrators.* Consorcio Ecuatoriano para el Desarrollo de Internet Avanzado (CEDIA). Cuenca – Ecuador. January 2012.
- *Grid Computing School for Users.* Consorcio Ecuatoriano para el Desarrollo de Internet Avanzado (CEDIA). Cuenca – Ecuador. January 2012.

3.6.2. Resource Centres Installation (Collaboration with WP4)

WP5 team have contributed with the installation of the following Resource Centres:

- Consorcio Ecuatoriano para el Desarrollo de Internet Avanzado (CEDIA). Cuenca – Ecuador. (**In production**).
- Universidad Industrial de Santander (UIS). Bucaramanga – Colombia.
- Universidad Tecnológica de Panamá (UTP). Ciudad de Panamá – Panamá.

4. HUMAN EFFORT

Table 2 shows the persons who are currently involved in WP5 activities.

Table 2: WP5 Human Resources

Name	Role	Partner
Gilberto Díaz	WP5 Manager ULA Site Administrator	ULA (Venezuela)
Leandro Ciuffo	WP5 Deputy Manager (until M11)	RNP (Brazil)
Nelson Vicuña	TWP5.2 Task Leader	UDO (Venezuela)
Sergio Orostegui	UIS Site Administrator	UIS (Colombia)
Salvador Salado	UTP Site Administrator	UTP (Panama)
Ximena Robles	CEDIA Network Administrator	CEDIA (Ecuador)
Ramon Diacovo	UFRJ Site Administrator	UFRJ (Brazil)

5. CONCLUSIONS

At the end of the second year of GISELA one can witness that the network monitoring platform is able to display the network performance between RCs where a MP has been installed and registered. The prototype developed has a central point from where network performance between pairs of RCs can be monitored. Therefore, any network problems that arise at any time can be detected and then fixed. The GISELA prototype system has been presented to the GT-Mediciones task force as a useful tool for the RedCLARA monitoring platform.

Concerning the network infrastructure, one can see from the graphs shown that, currently, the network performance level is satisfactory to submit jobs on the Grid.

Finally, a ticket system is providing a tool for reports management.