



MARWAN NREN & E-services

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Objectives

- Provide to moroccan universities a network with high bandwidth;
- Increase exchanges between Moroccan Universities by setting up common projects;
- Develop the ICT in Morocco by allowing the universities to participate in various international networking projects.

Evolution of MARWAN

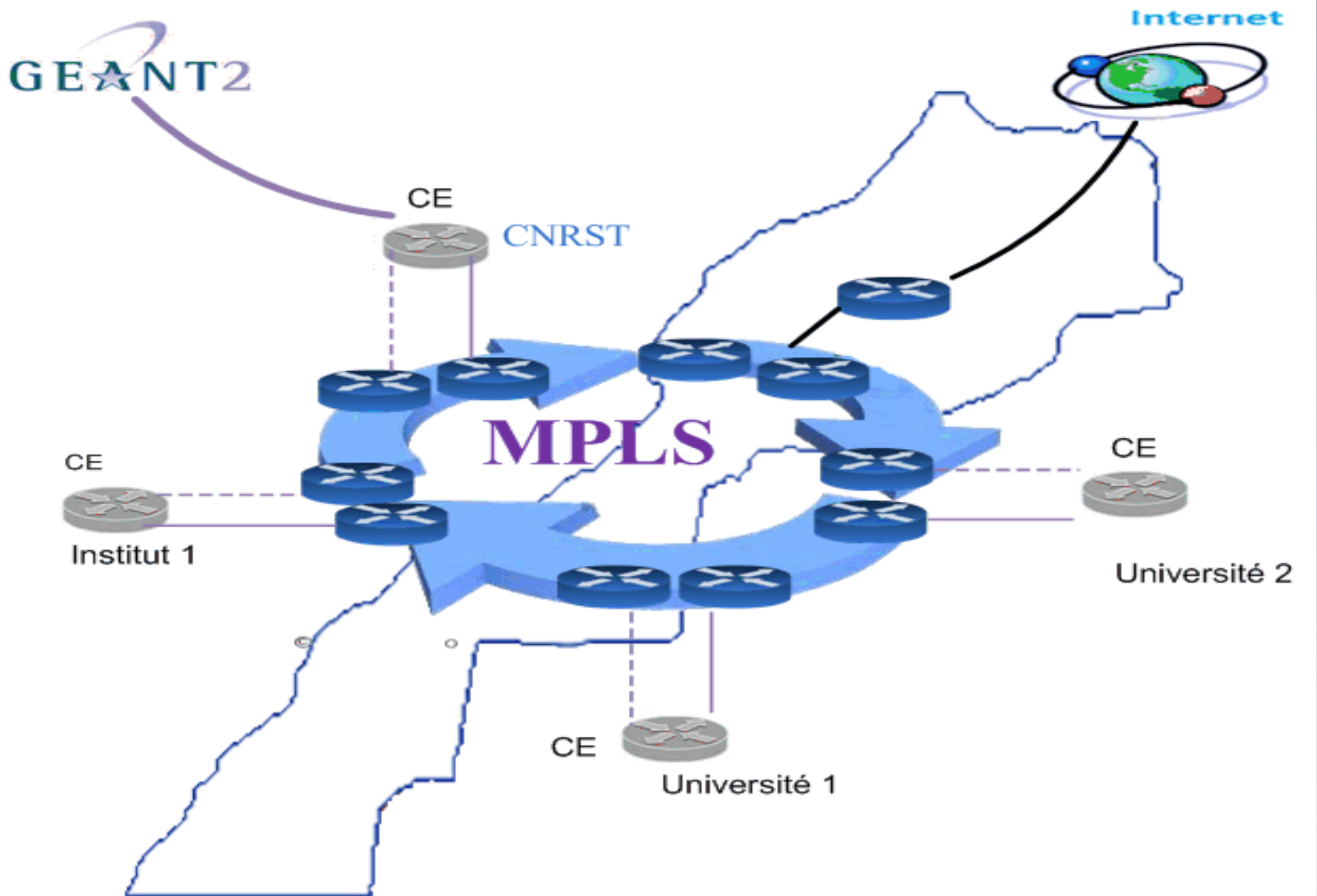
1998 – 2001
- Pilot stage
- 2 cities.

2002 – 2003 (MARWAN)
- Dedicated backbone;
- Interconnection of institutions in 16 cities.

2004 – 2010 (MARWAN2)
- Backbone based on VPN/MPLS;
- Bandwidth: 2 or 34 Mbps;
- Connexion to GEANT;
- Deployment of IPv6.

Since July 2010 (MARWAN3)
- Backbone based on VPN/MPLS;
- Bandwidth between 2 and 100 Mbps;
- Backup links;
- Connexion to GEANT (1 year);
- Connexion to Internet (1Gbps)

MARWAN 3



Organisation

- **MARWAN is part of the National Centre of Scientific and Technical Research (CNRST);**
- **Funded by the Ministry of Higher Education and Scientific Research;**
- **All education and research institutions can be connected to MARWAN;**
- **The technical management of the backbone is provided by the Telecom Operator.**

Connections (1/2)

INSTITUTIONS	Count
University	14
University Institutions	90
Institutions of Higher Education (Not belonging to universities)	7
Institutes and Research Centres	7
Ministries in charge of Education	2
University Hospital	1

Connections (2/2)

Bandwidth (Mbps)	Count
100	7
34	10
20	4
10	5
8	1
6	5
4	1
2	1

- The total bandwidth from institutions to MARWAN 3 is 1216 Mbps;
- The bandwidth of MARWAN 3 towards the outside is 1Gbps.
- Ratio outside-BW/inside-BW = 0.84

Google Global Cache



Google Confidential Information, your usage restricted. <Learn more>

AS30983

bouhaddou@
Marwan Network

ISP Portal

Home

All ASNs

48 hours

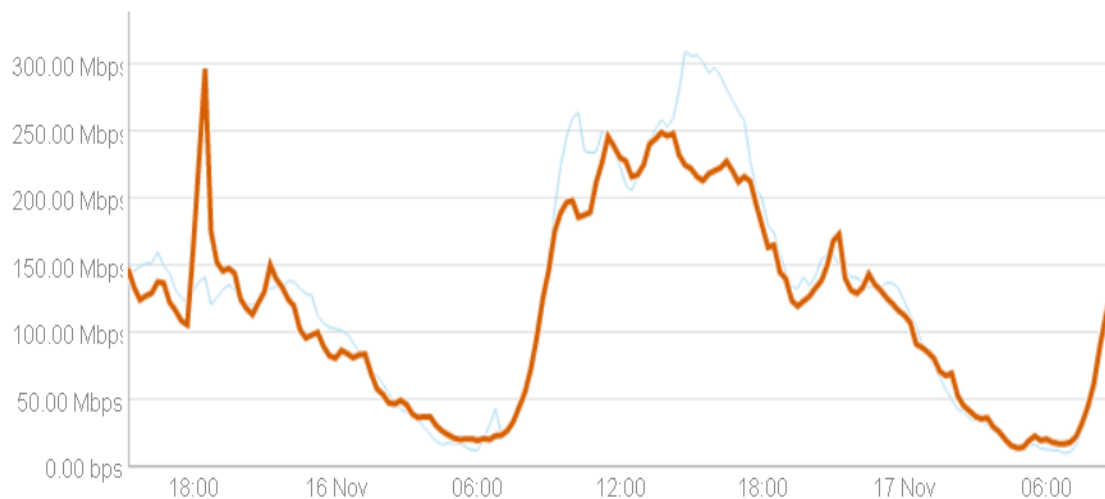
Home

Traffic Type Breakdown (Delayed 6h)



zoom out

stack



Tue Nov 17 2015 09:00:00 GMT+0000 (Maroc):

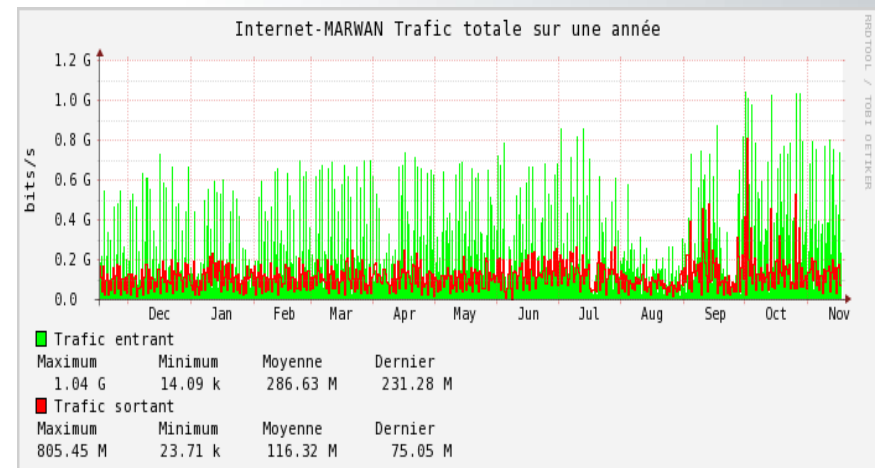
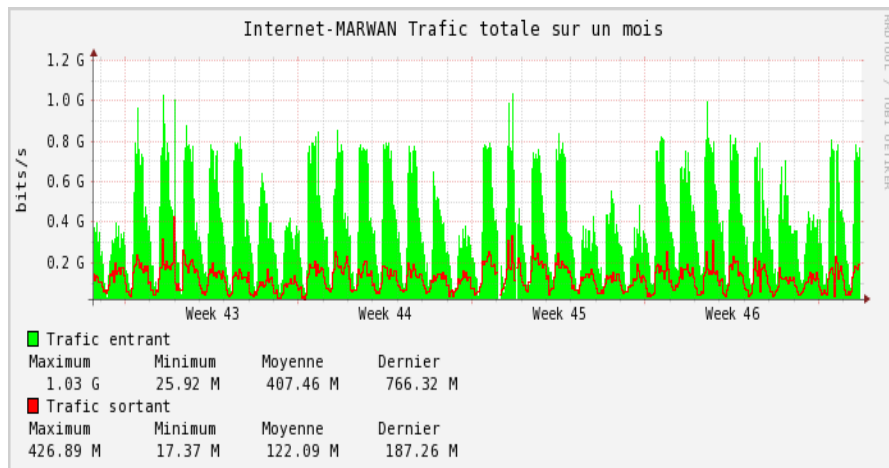
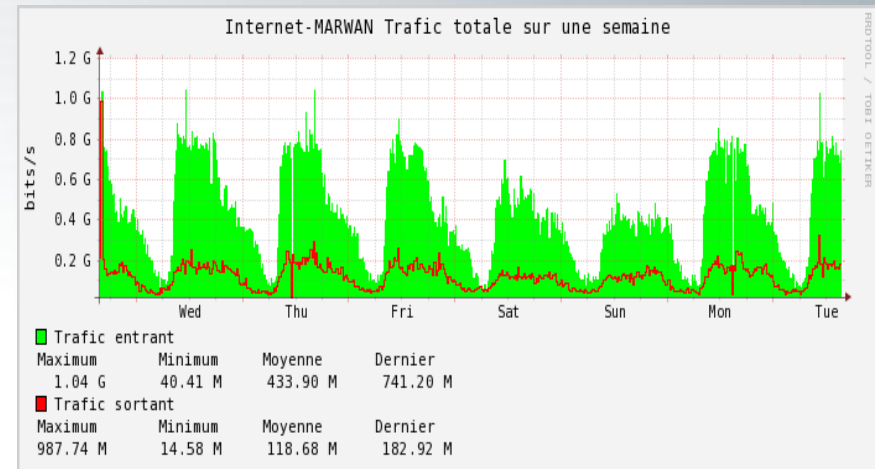
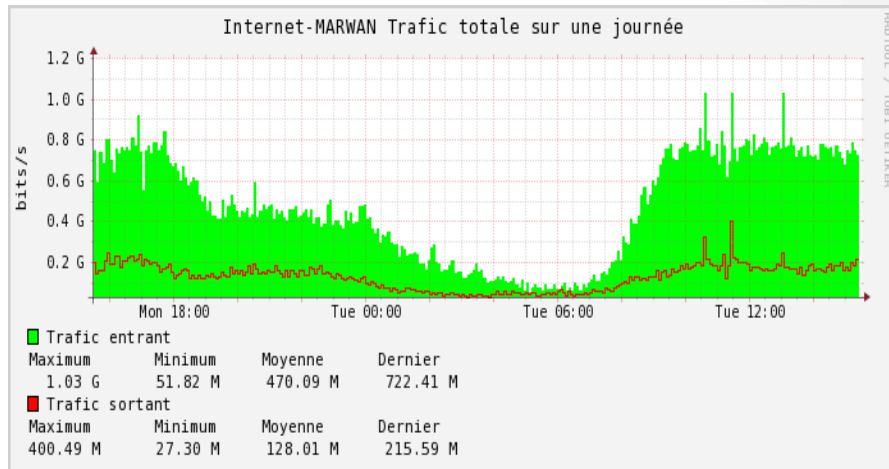
Total: 275.73 Mbps:

GGC: 142.20 Mbps

Indirect: 133.53 Mbps

Monitoring (1/3)

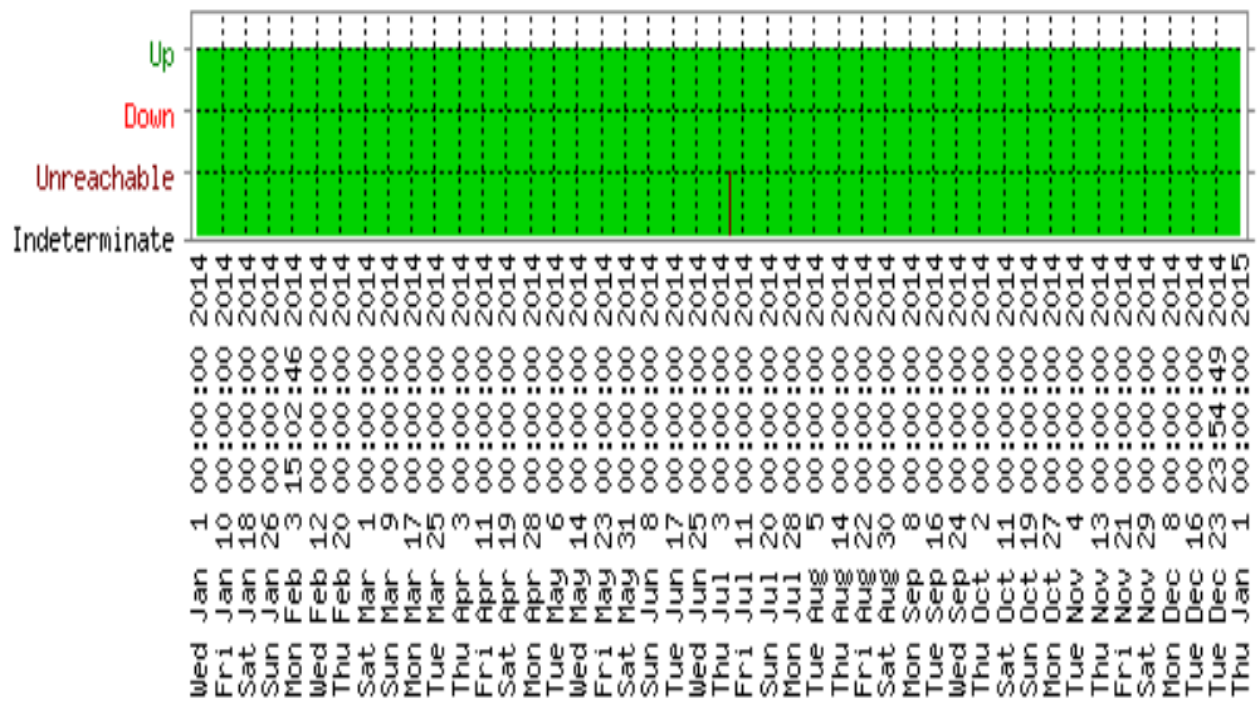
MARWAN-Internet link : 1 Gbps



Monitoring (2/3)

State History For Host 'Internet-routeur'

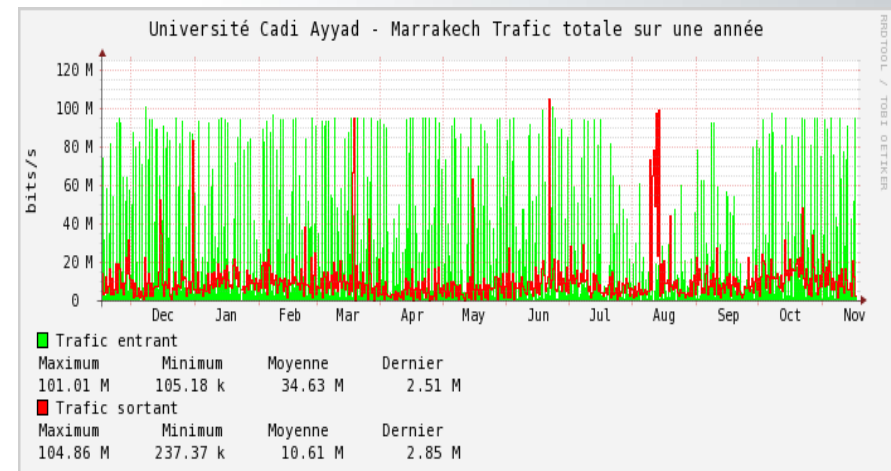
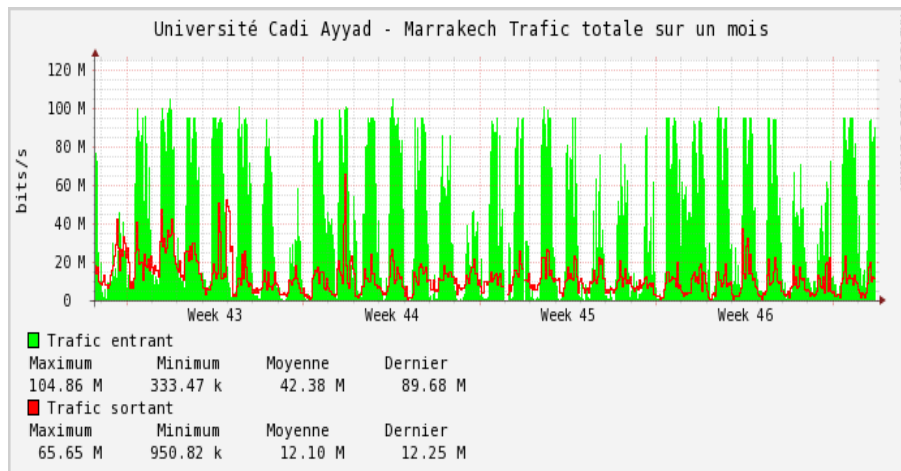
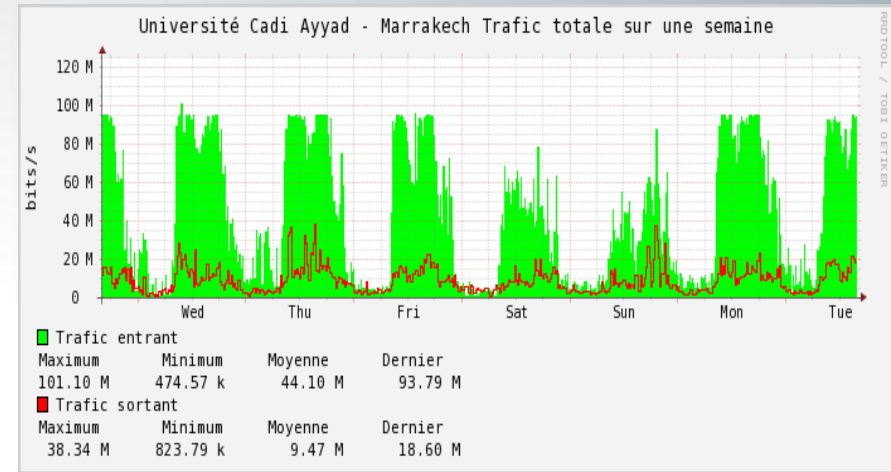
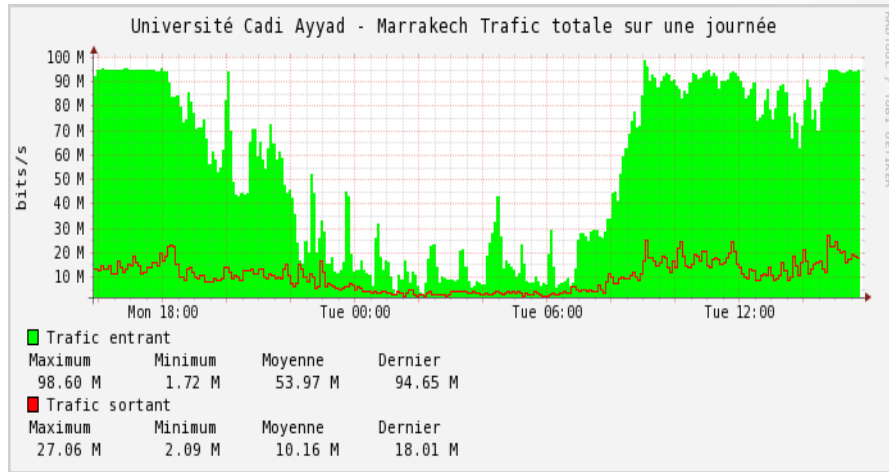
Wed Jan 1 00:00:00 2014 to Thu Jan 1 00:00:00 2015



Up : (99.773%) 364d 4h 4m 39s
 Down : (0.081%) 0d 7h 7m 3s
 Unreachable : (0.146%) 0d 12h 48m 18s
 Indeterminate: (0.000%) 0d 0h 0m 0s

Monitoring (3/3)

Cadi Ayyad university : 100 Mbps



EduRoam (Education Roaming)



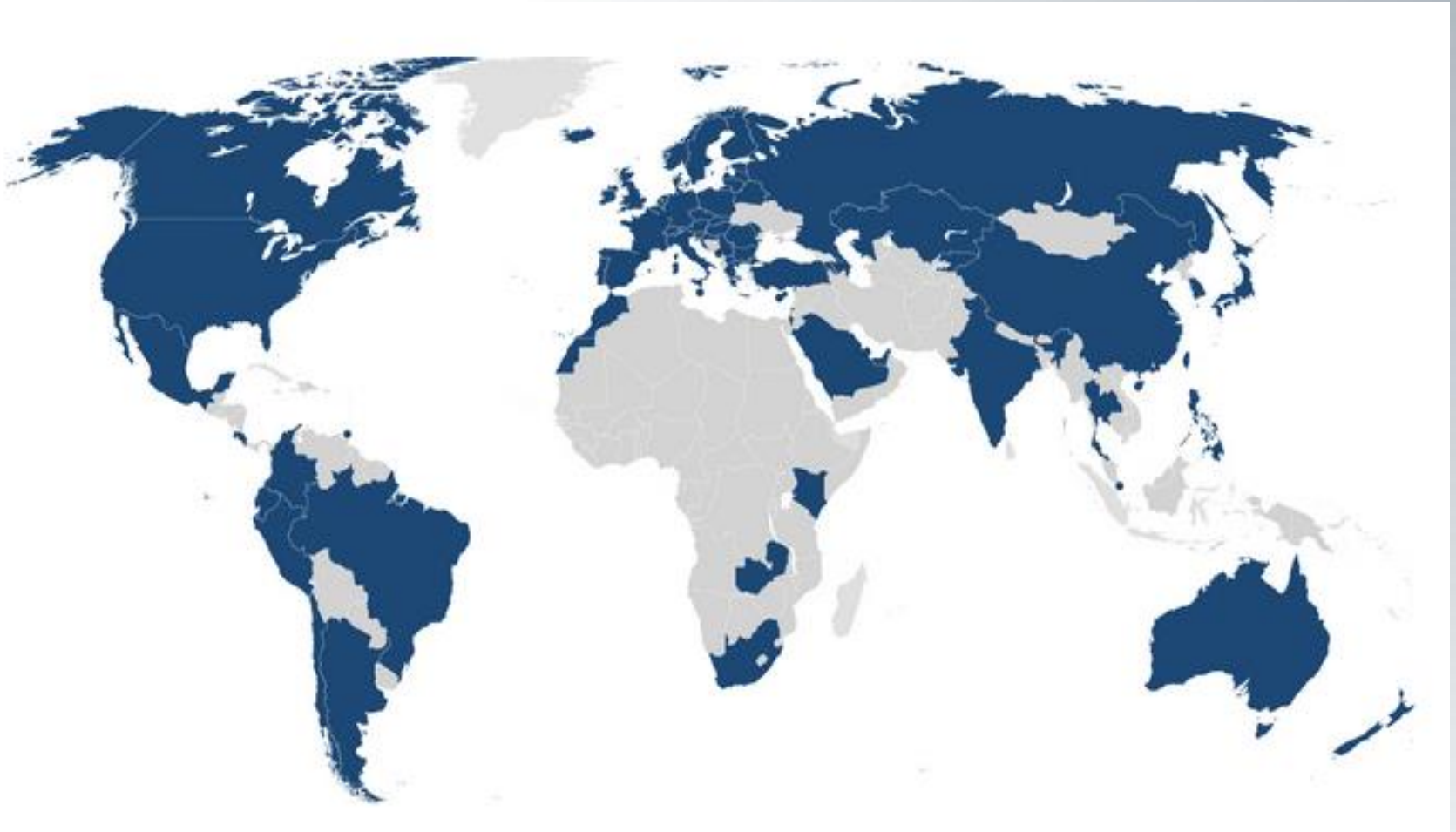
- Ensure access to the Internet via secured WiFi for institutions connected to MARWAN

- Protecting the authentication data and user traffic

- Allow people of institutions connected to MARWAN when moving to use the network infrastructure of the visited institutions

- Member of the international EduRoam

EduRoam (Education Roaming)



The Moroccan Identity Federation for education and research eduIDM

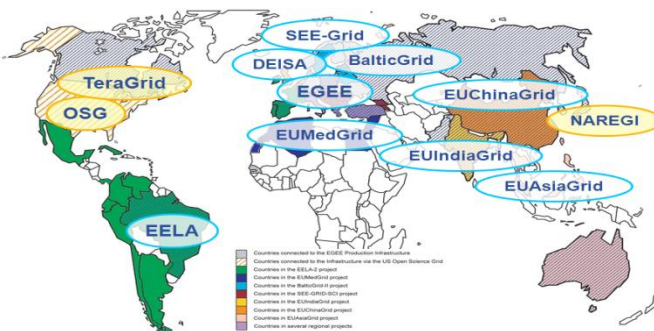
- Establish an organizational framework and confidence for sharing web resources between universities. It connects web resource providers (applications, portal, documents ...) with identity providers;
- Encourage the development of content in universities;
- Develop a simplified, controlled and secure exchange of personal data and content between universities;
- Use a single identity to benefit from all services offered by eduIDM;

MaGrid : National Computing Grid

MaGrid offers computing power and storage to Moroccan scientific community.

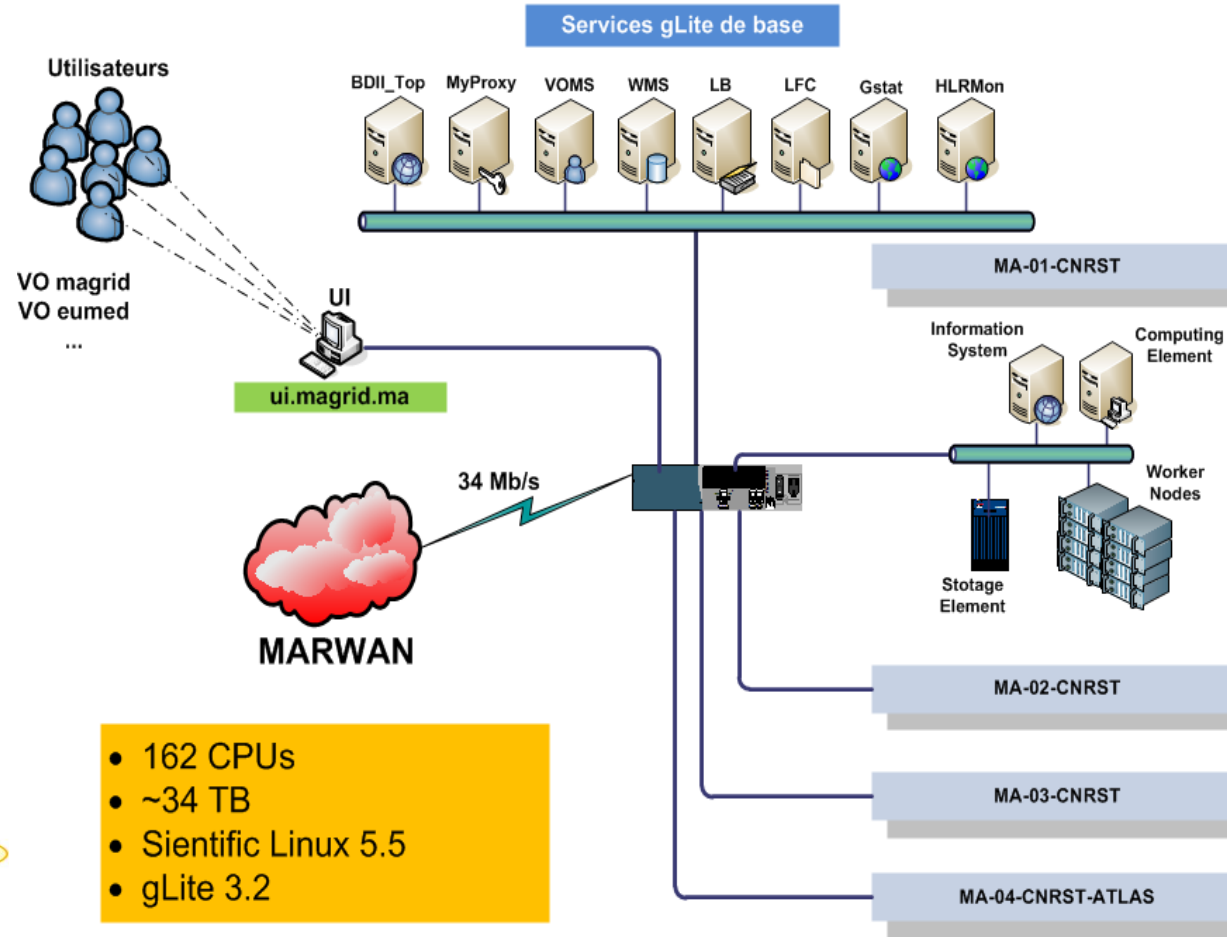
Over 112 trained users from:

- Chemistry
- Bioinformatics
- Mathematics
- Biomedecine
- Meteorology



Architecture MaGrid

CNRST - Rabat



- 162 CPUs
- ~34 TB
- Scientific Linux 5.5
- gLite 3.2

Monitoring & accounting

gstat.magrid.ma
mon.magrid.ma

Perspectives

- Increase MARWAN-Internet link;
- Increase the bandwidth of the universities;
- Apply QoS;
- Implement IPv6;
- Implement Multicast;
- Set up new Eduroam sites;
- Set up new IdPs and SPs;
- Join the international confederation eduGAIN.

Thank you for your attention