MARWAN
Moroccan NREN

e-AGE18 – Amman 2-3 December 2018

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Research Funding:
• Call of Projects

Resource Sharing:
• UATRS: Sharing of heavy equipment (Chemistry/Biology/Materials Science)
• IMIST: Access to Technical & Scientific Information
• MARWAN: e-Infrastructures & e-Services
Mission

E-Infrastructures:
• **MARWAN NREN**
• HPC (MAGRID / MAGRID CA)
• Cloud for Research & Higher Education 2019?

E-Services:
• Roaming Wifi : EduRoam
• Identity Federation : EduIdm
• Digital Certificates : TCS
• EduVPN 2019
• SOC for Research & Higher Education 2019?
MARWAN NREN

- Start: 1998
- Funded by the Ministry of Higher Education, CNRST & Universities
- All education and research institutions can be connected to MARWAN
Objectives

- Provide connectivity to Moroccan universities
- Offer federated services
- Increase exchanges between universities
- Connect to regional network to facilitate universities’ participation in international scientific collaborations
- Reduce the global cost of the connectivity
Evolution

1998
- **MARWAN**
  - Backbone: Copper Leased Lines / ONPT / Access: 64 – 512 Kbps
  - Funding: Ministry of Higher Education + Universities

2005
- **MARWAN 2**
  - Backbone: FO VPLS-L3 / Maroc Telecom / Access: 2 – 34 Mbps
  - Funding: CNRST + Universities

2010
- **MARWAN 3**
  - Backbone: FO VPLS-L3 / Meditel / Access: 34 – 100 Mbps
  - Funding: CNRST + Universities

2017
- **MARWAN 4**
  - Backbone: FO VPLS-L2/ INWI / Access: 100 Mbps – 5 Gbps
  - Funding: Ministry of Higher Education
95% of the budget goes to telecom operators
GEANT Connectivity

MARWAN 2
- Catania PoP RE + Internet
- 34 Mbps in 2005
- 155 Mbps by 2010

MARWAN 3
- Madrid PoP RE
- 40 Mbps in 2012
- 2013

MARWAN 4
- ASREN London PoP RE (VPN)
- 1 Gbps in 2018
MARWAN 4

ASREN GEANT

VPLS INWI

Network Demarcation INWI/MARWAN
Marwan 4 connects all the higher education and research institutions in Morocco:

- 200 institutions connected (80 links / 30 cities)
- 15,000 professors and researchers
- 800,000 students
Services

• Connectivity:
  • High Bandwidth Access (100 Mbps – 5 Gbps)
  • Internet Access: 2 x 10 Gbps
  • GEANT: 1 Gbps
  • IPv6, QoS & Multicast

• e-Services:
  • EduRoam
  • Identity Federation (EduGain)
  • Trusted Certificate Service (TCS)
Services

- High Performance Calculation (HPC)
  - MaGrid (2005)
  - MaGrid CA (EugridPMA)
  - New Datacenter & HPC Cluster (2018):
    - 760 Cores (68 Tflops)
    - 5,2 TB Memory
    - 102 TB Storage
    - 100 Gbps OPA Network
Challenges/Constraints

- Governance / Strategy:
  - Marwan is not a legal entity
  - Completely dependent on the CNRST and Ministry’s strategies

- Budget:
  - Source of funding
  - Limited budget

- Human Resources:
  - Difficulty in recruiting
  - Difficulty in retaining

- Universities use:
  - Low use of the services offered by Marwan
  - Internet access is the main preoccupation for Universities

- Telecom Environment:
  - No Infrastructure Operators, and only Telecom Operators
Usage Rate

• Connectivity :
  • High bandwidth access
  • Internet Access
  • Regional Connectivity
  • IPv6, QoS & Multicast

• e-Services :
  • EduRoam
  • Identity Federation (EduGain)
  • Trusted Certificate Service (TCS)
  • High Performance Calculation (HPC)
Future Prospects

• December 2021: End of the 5 years contract of MARWAN 4

2022 MARWAN 5

- e-Service Provider: 5% €
- Connectivity Provider: 95% €
- e-Service Provider: 5% €
Thank you for your attention!