Securing a campus WLAN

By

Joan Masai & Maureen Njue
Kenya Education Network (KENET)

jmasai@kenet.or.ke  mnjue@kenet.or.ke
Who is KENET?

• Kenyan NREN
• High Speed broadband services
  - Institutions of higher learning
  - Research centers
  - Schools
  - Government Institutes in Education etc
KENET Network Coverage

<table>
<thead>
<tr>
<th>POP</th>
<th>Number of Campuses Connected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nairobi</td>
<td>88</td>
</tr>
<tr>
<td>Kisumu POP</td>
<td>30</td>
</tr>
<tr>
<td>Mombasa POP</td>
<td>14</td>
</tr>
<tr>
<td>Eldoret POP</td>
<td>17</td>
</tr>
<tr>
<td>Nakuru POP</td>
<td>15</td>
</tr>
<tr>
<td>Meru POP</td>
<td>26</td>
</tr>
<tr>
<td>Total</td>
<td>190</td>
</tr>
</tbody>
</table>

Transforming education through ICT
Shared Services

- Mail filtering
- Campus Network Advisory Services
- Virtual Private Network (VPN) Services
- Domain Services
- Webhosting
- Training and Capacity Building
Research Services

Video and Web Conferencing
Special Interest Groups (SIGs)
Travel Grants
Access To Grid Computing
- KENET CA – offering certificates
- KENET IdP
eduroam
Deploying a Campus WLAN

**Infrastructure**
- Good Campus LAN design practices to handle the WLAN
- LAN segmentation - influences QoS and also security

**Power**
- Poe to power the access points
- Power to charge laptops and mobile devices

**Bandwidth**
- Does your institution have sufficient bandwidth? How about distribution capacity – ties to infrastructure
- Bandwidth requirements increase with deployment of wireless devices

**Where to deploy access points**
- A site survey is done to determine where students gather
- Including social areas, Lecture halls, library, hostels etc

**Monitoring**
- Fault detection
- Traffic load on the link
Deploying a Campus WLAN

Light weight vs Stand Alone access points
- Light weight access points are access points that have central management unlike stand alone access points that you have to configure each individually.

Advantages of Light weight access points.
- Centralized Management of all access points
- Centralized Radio Management for all access points
- Load balancing
- Scalability
- Ease of upgrade

Access Point features
- VLANs support IEEE 802.1q
- IEEE 802.1x
- Multiple SSIDs
- Ports PoE Gigabit Ethernet
Deploying a Campus WLAN

802.1x
What is eduroam?

- eduroam is a service enabling students and researchers access a secure Wi-Fi when they travel to other eduroam service provider institutions
- Leverage on 802.1x, adds roaming functionality
- Intra-NREN roaming
- Inter-NREN roaming
eduroam Projects

Unified WLAN Solutions

2013
• Cisco Solution
• 10 campuses

2014
• Hp Solution
• 9 campuses

2016
• Unify Solution
• 7 campuses
eduroam Requirements

RADIUS Server
User Database
End Points/Access Points
eduroam

Policies and practice
• Guide implementations
• Acceptable User Policy
Challenges faced

- Physical security of APs
- Licensing for controller
- Updating the database
  - for those institutions with no user dB
- Client device configuration for eduroam
- Dynamic institutional campus environments
eduroam in Kenya

http://eduroam.ac.ke/
Transforming education through ICT

Questions and Answers
Asante

jmasai@kenet.or.ke
www.kenet.or.ke
Jomo Kenyatta Memorial Library, University of Nairobi
P. O Box 30244-00100, Nairobi.
0732 150 500 / 0703 044 500