

1



One Laptop per Child

Connectivity & Collaboration

May 20, 2008

ONE LAPTOP PER CHILD

1



Principles

Learning happens by interacting as much as it happens by teaching => child2child as important as child2internet

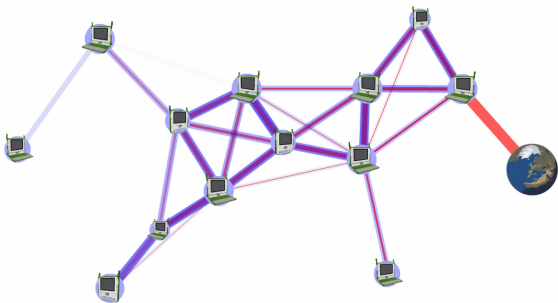


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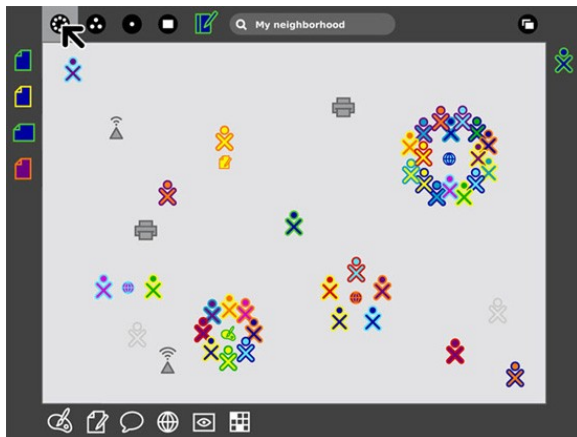
Our approach

- Standard WiFi network adapter
- Mesh Networking built on top of that



Our approach

- Collaboration software (middleware, applications and UI)



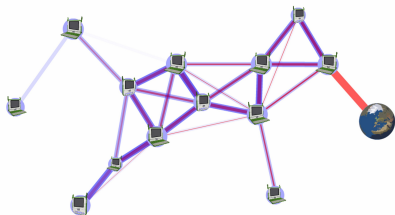
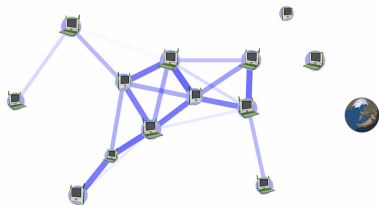
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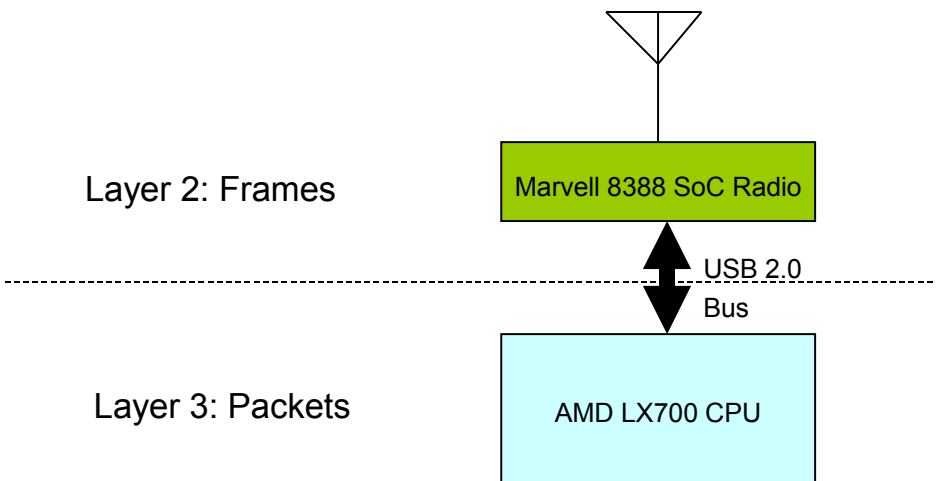
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OLPC Mesh Design Goals

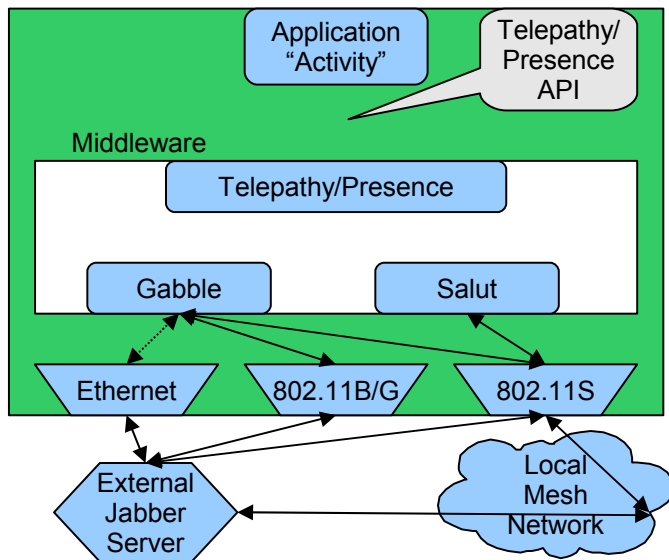
- low power consumption
- as transparent as possible to applications
- based on standards
- Connectivity/Range



XO Networking Architecture

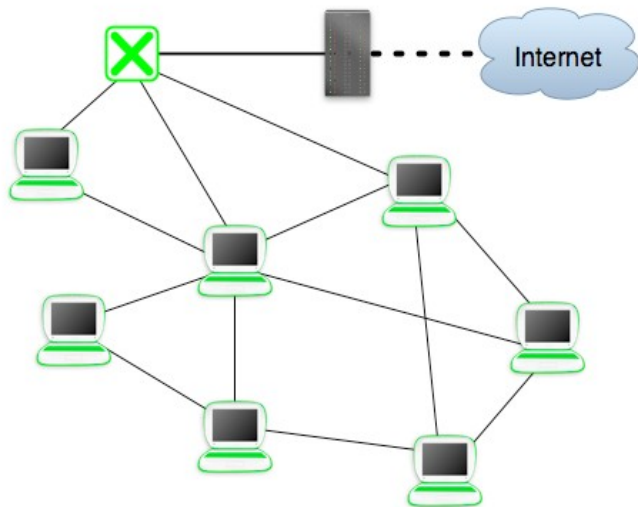


OLPC Collaboration Middleware



Mesh Network Gateways (portals)

- Mesh portals connect laptops to servers and an Internet connection



Collaboration

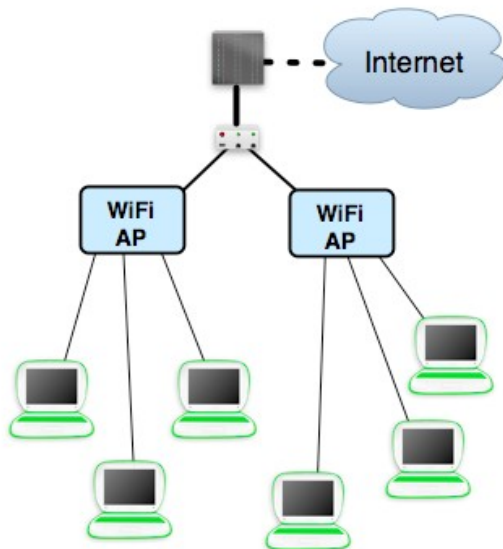
- The ability of students to share documents and directly interact with one another
- Requires a network connection between the student's laptops:
 - Traditional Wireless (802.11b/g)
 - Mesh Wireless (802.11s)
 - Possibly long distance

Mesh vs. WiFi

- The wireless mesh (802.11s) is an extension of traditional WiFi (802.11b/g)
- Both use the same radio spectrum
 - 3 usable channels around 2.4GHz
- Wireless mesh devices (the laptop) interoperate with WiFi devices
- Mesh does not replace WiFi (it extends it)
- WiFi should be used at Schools

School WiFi

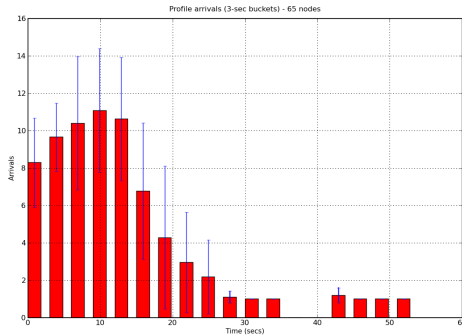
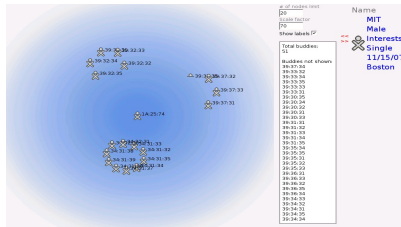
One or more WiFi (802.11b/g) access points, connected to a central switch and school server



Collaboration

- Presence is the ability of students to “see” if other laptops are connected to the network
- Collaboration is the ability of students to share activities and documents they’ve created.
- Presence and Collaboration work over any network, not just a Mesh network

Cerebro



ONE LAPTOP PER CHILD

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Do it yourself

Installation Sheet of Active Antenna

1 Appearance

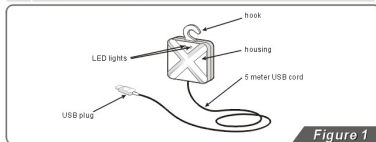


Figure 1

2 Installation

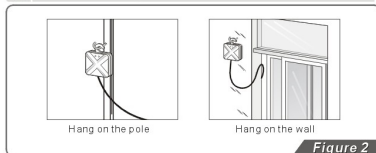


Figure 2

3 USB Plug Connection

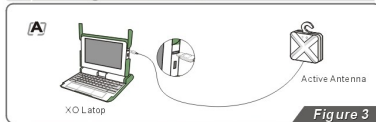


Figure 3

OLPC Laptop

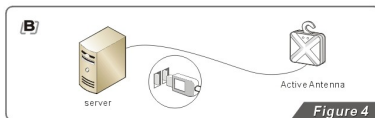


Figure 4

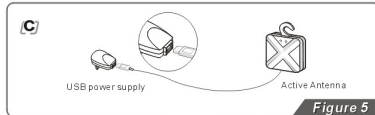


Figure 5

4 Network Communication

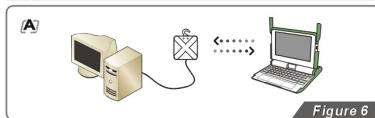


Figure 6

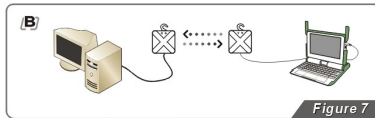
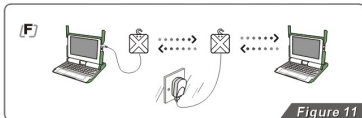
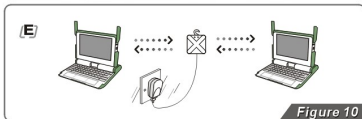
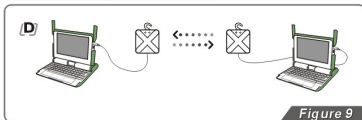
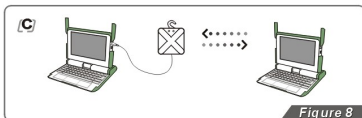


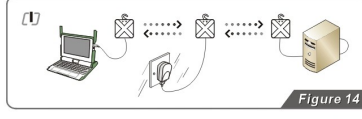
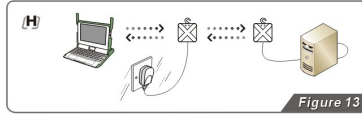
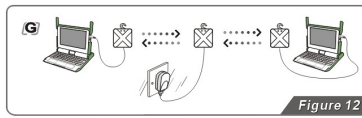
Figure 7

Active Antennas

Installation Sheet of Active Antenna



OLPC Laptop



Attention

For having the good efficiency, the location of Active Antenna is better to place as follows:

1. No metallic items are placed nearby it.
2. For long distance transmission, the Active Antenna is needed to place in open area where does not have big barrier (such as wall, building, etc) in front of it.
3. The ambient temperature should be within -10°C and 50°C.