WebForce International Federation
Global Project
Technical applications

Presented by Prof. R. Mellet-Brossard
President CEO WebForce International
Preamble

Connecting the unconnected by 2015

_Connect the World_ is a multi-stakeholder platform designed to encourage collaboration and coordination as well as showcase ICT development efforts to achieve the connectivity goals of the _World Summit on the Information Society (WSIS)_ , namely to "connect the unconnected by 2015".

Through _Connect the World_, ITU is working with partners to mobilize the human, the financial and the technical resources required to expand the development of ICT infrastructure, connectivity and access.

(source: ITU, full text: [http://www.itu.int/partners/index-fr.html](http://www.itu.int/partners/index-fr.html))

_The following represents WebForce International Federation’s participation to International Telecommunications Union’s « Connect the World » program._
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<td>• Box2Access</td>
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The Global Project

Research and & Development

• Set of complementary proposals

• Our virtual research center has worked on the compatibility of various technologies:
  - **Hardware**: network equipments, telephony, computing terminals...
  - **Software**: VoIP servers, softphones, application servers... all based on Opensource licenses.
The Key2Access network

The ICT access network

- Bring the connectivity:
  - When it does not exist
  - When existing means are too expensive
  - Up to 20 Gbits/s capacity

- Restore the communications on emergency cases

- Implementation of « WebForce Points »
The Key2Access network

General principle of a "WebForce Point"

• Base station: BTS
  ➢ Connected to the Internet backbone
  ➢ Backhaul Wi-Fi / Wimax structure
  ➢ Can manage up to 40,000 users
  ➢ A BTS covers 360° (low density) or 90° (high density)
  ➢ Manages the link to the CPEs but also with other BTS
The Key2Access network

General principle of a "WebForce Point"

- **Client access point: CPE**
  - Connection point to the network
  - Demarcates the coverage
  - **Constituted of:**
    - A full duplex Wi-Fi or WiMax antenna for the connection with the BTS, with a preference for the use of ISM frequencies.
    - A router using 2 different realms, channels and ESSID.
    - A UPS case to insure the power supply of the CPE in case of power failure.
The Key2Access network

Connectivity: simple infrastructure

One BTS
Point to Multipoint network

The Public WebForce Point is limited to an area to cover.

This area will be under a sole BTS control that will be in charge of a series of cells that contain their own CPE.

Each user can then connect in each cell thanks to his/her Wi-Fi equipment.
The **Key2Access** network

**Connectivity: Extended infrastructure**

A set of BTS forms a mesh network that enables to extend the coverage area over several hundreds of km.
The Key2Access network

Attributes

• For a BTS:
  - Up to 1000 VoIP connections
  - Possibility to connect several BTS to the backbone to insure fail safe

• For a CPE:
  - 20 VoIP user + 20 Internet users
  - 30kbps for one VoIP connection, thus 600 kbps per CPE to insure a good quality of service.

• A BTS can support up to 50 CPE, and thus must have a 30 Mbits/s minimal bandwidth for 1000 simultaneous VoIP connections.
The Key2Access network

Assets:

- Fast deployment with low costs
- Large capacity

Practical applications:

- Internet access
- VoIP
- E-Learning
- Telecommuting...
The thin clients

Definition

• Computing terminal integrating the necessary for a client-server connection:
  • Motherboard
  • RAM memory
  • Microprocessor
  • Flash memory for the storage
  • Network interface
  • Connectors for the peripherals

• The applications are hosted on a dedicated server
The thin clients

Assets

• Low cost due to its conception

• Safer: The applications being executed on the server, the client does not need any antivirus or firewall.

• Data integrity: These are stored on the server and benefit of regular backups as well as fail safe systems.

• The clients always have up-to-date software, these being managed server-side.

➢ Thin clients represent 14,5% of the enterprises computers pool in 2007 (12,1% in 2006), and the volume of this market should double by 2010 (source: IDC).
The thin clients

An alternative for refurbishing

• **Obsolete machines** allowing only low evolutivity

• **Pollution:** Cathodic screen, notably, can be considered as **polluting bombs** worldwide, and especially in countries that are already used as **computing garbages by developed countries.**

• **Power consumption:** A classic computer consumes more than 200W, against a 5 to 20W consumption for a thin client. This fact is even more real as the computers are old.

And so WebForce and his partners within the framework of the WebForce network, of the NGO Alliance and of the CODETIC proposes the objective: **resolution of the digital divide by 2012.**

WebForce International Federation dedicates himself to **the use of thin clients as terminals for the users as a big part of the solution.**
The **thin clients**

Comparison: the costs

<table>
<thead>
<tr>
<th></th>
<th>Heavy client Windows XP</th>
<th>Heavy client Linux</th>
<th>Refurbished client Linux</th>
<th>Thin client Windows XP</th>
<th>Thin client Linux</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Costs of acquisition and shipping</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OS Licenses</td>
<td>90,00 €</td>
<td>0,00 €</td>
<td>0,00 €</td>
<td>90,00 €</td>
<td>0,00 €</td>
</tr>
<tr>
<td>PC/Thin client cost (screen included)</td>
<td>350,00 €</td>
<td>350,00 €</td>
<td>80,00 €</td>
<td>120,00 €</td>
<td>120,00 €</td>
</tr>
<tr>
<td>Shipping</td>
<td>5,00 €</td>
<td>5,00 €</td>
<td>15,00 €</td>
<td>1,50 €</td>
<td>1,50 €</td>
</tr>
<tr>
<td><strong>Buying + shipping total</strong></td>
<td>445,00 €</td>
<td>355,00 €</td>
<td>95,00 €</td>
<td>211,50 €</td>
<td>121,50 €</td>
</tr>
<tr>
<td><strong>Cost of electric consumption for one year</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electric power (Watts, screen included)</td>
<td>300</td>
<td>300</td>
<td>400</td>
<td>55</td>
<td>55</td>
</tr>
<tr>
<td>Annual consumption (8h / day, 365 days / year)</td>
<td>876 kWh</td>
<td>876 kWh</td>
<td>1168 kWh</td>
<td>160,6 kWh</td>
<td>160,6 kWh</td>
</tr>
<tr>
<td>Total electric cost (based on an average kWh cost of 0.09€)</td>
<td>78,84 €</td>
<td>78,84 €</td>
<td>105,12 €</td>
<td>14,45 €</td>
<td>14,45 €</td>
</tr>
<tr>
<td><strong>Annual total per client</strong></td>
<td>523,84 €</td>
<td>433,84 €</td>
<td>200,12 €</td>
<td>225,95 €</td>
<td>135,95 €</td>
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The thin clients

Comparison: the costs

Accumulated cost: equipment buying + license + shipping (€)

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Annual electric cost (€)

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## The thin clients

### Comparison: the costs

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<td><strong>Total cost after a year (€)</strong></td>
<td>523,84 €</td>
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<td>200,12 €</td>
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</table>

**Cost distribution for a refurbished client**
- **PC/Thin client cost (screen included)**: 53%
- **Shipping**: 11%
- **Total electric cost (based on an average kWh cost of 0.09€)**: 7%

**Cost distribution for a thin client**
- **PC/Thin client cost (screen included)**: 88%
- **Shipping**: 1%
- **Total electric cost (based on an average kWh cost of 0.09€)**: 11%
## The thin clients Comparison: Assets/inconveniences

<table>
<thead>
<tr>
<th></th>
<th>New computer</th>
<th>Mark / 10</th>
<th>Refurbished computer</th>
<th>Mark / 10</th>
<th>Thin client</th>
<th>Mark / 10</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unitary cost</strong></td>
<td>≥300€</td>
<td>3</td>
<td>Between 50 and 250€</td>
<td>9</td>
<td>Between 100 and 200€</td>
<td>7</td>
</tr>
<tr>
<td><strong>Size</strong></td>
<td>Medium</td>
<td>5</td>
<td>Big</td>
<td>2</td>
<td>Very little</td>
<td>9</td>
</tr>
<tr>
<td><strong>Licenses cost</strong></td>
<td>• Depends on the OS. • Softwares cost.</td>
<td>5</td>
<td>• Quid of the licences transfer ? • Softwares cost.</td>
<td>5</td>
<td>• Linux • Lower cost for the softwares</td>
<td>8</td>
</tr>
<tr>
<td><strong>Consumption</strong></td>
<td>The current processors are less greedy but the consumption remains high.</td>
<td>4</td>
<td>Ancient equipment is often more energy-intensive,</td>
<td>2</td>
<td>Very low consumption processors. Low energy-intensive TFT screens.</td>
<td>9</td>
</tr>
<tr>
<td><strong>Sécurity</strong></td>
<td>Local OS : The security depends on the established rules, on the installed security softwares and their updating, as well as on the users</td>
<td>4</td>
<td>Local OS : The security depends on the established rules, on the installed security softwares and their updating, as well as on the users</td>
<td>4</td>
<td>Centralized security: the risks are small.</td>
<td>9</td>
</tr>
<tr>
<td><strong>Evolution capacities</strong></td>
<td>Middle term evolutivity, depending on the hardware configuration.</td>
<td>6</td>
<td>Low evolution possibilities for low costs machines.</td>
<td>2</td>
<td>Nearly unlimited : only the heavy applications are to exclude.</td>
<td>8</td>
</tr>
<tr>
<td><strong>Reliability</strong></td>
<td>Mobile pieces, sensitivity on heat and dust,</td>
<td>5</td>
<td>Ancient equipment : more possibilities of failures.</td>
<td>3</td>
<td>No mobile pieces, low heat dissipation,</td>
<td>9</td>
</tr>
<tr>
<td><strong>Pollution</strong></td>
<td>Low polluting TFT screens but pretty energy-intensive processors.</td>
<td>6</td>
<td>• CRT screens. • Old processors: high energy consumption,</td>
<td>2</td>
<td>• TFT screens. • Very low energy consumption.</td>
<td>9</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>Heterogeneity of the computers pool.</td>
<td>4</td>
<td>Dependence on the network. Limitations due to the closed environment.</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Average mark /10</strong></td>
<td>4,75</td>
<td>3,67</td>
<td>8,00</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The thin clients

Implementation

- Application servers the closest possible of the end users
- Low latency: LAN, WLAN (Wi-Fi) or MAN (Wimax) connection

The WebForce network is also intended for VoIP:
- Softphones on thin clients
- IP phones
- WIFI IP phones
- PSTN gateways...

WebForce main server:
- User authentication
- Application servers management

Servers subsystem:
- Application hosting
- Saving...

Thin clients:
- End users
- WIFI or RJ-45 connectivity
- VoIP capabilities

Via the WebForce wireless network

Directly linked to a desktop

Internet
The Voice over IP

Problematic

- Communications are, still today, unaccessible to a large part of the world population.
  - **Geographic problematic:** difficult implementation of wires, wireless coverage too limited...
  - **Cost problematic:** wiring, satellite links, GSM links... still are too expensive solutions.

Though, the VoIP proposes an alternative allowing very low costs. With the Key2Access network, WebForce wishes to create an open door to the world making a community network available.
The Voice over IP

Emergency situations

• Communications are a key element on the prevention and the reaction on emergency situations.

• Memorandum of understanding between WebForce and the ITU within the framework of the « Save Lives » program: bring the VoIP on a new field putting the Key2Access network at the disposal of the alarm network driven by the United Nations for the disasters in the world.

• So, the NGOs worldwide can dispose of a communications network with very advantageous costs to fulfill their missions.
The Voice over IP

Implementation

• Proprietary solutions are too expensive for a humanitarian application.
  ➢ Use of opensource solutions: Asterisk, SIPx...

• Need of supplementary developments to fit the project:
  ➢ Creation of an opensource workgroup for the development of a customized solution.
The Voice over IP

Purpose

• The VoIP on the Key2Access network can be defined on a simple principle: that of the minimal cost.

• Every communication to IP phones inside the network are free of charges.

• The communications to analog external phones are cheap thanks to the assets brought by Internet.

The costs are thus minimal and make telephony available everywhere around the world.

And to reduce again the costs of the communications as well as the costs of the data transmission, WebForce wishes, with the help of partners and sponsors, to be able to install between 10 and 20 new gateways in various countries every year.
The **Box2Access** terminal

An integrated access box

• **An end and a tool** at the same time within the Key2Access network:
  • Computing terminal destined to the users;
  • **Network sharing**: each client can be connected in **open mode** (network redistribution) or **closed mode** (private connection).
    - Putting the Key2Access network at the disposal of all.

• **Based on the principle of the thin client**
  - **Price not exceeding $200**, being possibly funded by **microcredit**.

• Computing solution for all:
  • Very low energy-intensive;
  • Equipped with "standard" peripherals.

Our virtual research center is currently studying solutions for **solar power supply**.
The Box2Access terminal

Applications

• Internet access

• VoIP

• Use of various applications: education, health, desktop applications... the possibilities are almost unlimited.

• Ideal for public structures: schools, universities, administrations...

• But ideal too for the SME/SMI on all countries.
For a world partnership

• This technologic convergence is the fruit of researches and studies made by WebForce for several years and represents its participation to the International Telecommunication Union « Connect the World » program.

• Without the strong support that the ITU can bring, the process of implementation would be very slow.

• WebForce proposes to the I.T.U. a partnership so as to be able to attract as well the investments as the donations and the possible contribution of countries, universities, etc.

We look for all possible partnership as well at the intergovernmental level (UNESCO, GAID, PNUD, etc.) that with the NGOs, without forgetting the private sector with socially responsible companies.
Contacts

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Tel: +33 4 68 324 797

Informations on partnerships: partner@webforce.org

Thanks for your attention