

Notas e Discussões

How are simultaneously connectable two or more PC using an “internet key” or using a mobile phone modem: a low cost solution

(Como dois ou mais PC's s podem ser conectados simultaneamente por meio de uma “internet key” ou um modem para celular: uma solução de baixo custo)

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This paper shows how two or more PC are simultaneously connectable using an “Internet Key” or using a mobile phone modem through crossed Ethernet cable. These simple “tricks” represent low cost solutions to overcome expensive routers. Bluetooth connection may overcome the use of the Ethernet cable having so a wireless network. Science Information Lab (or Physics Lab) so may have a benefit in solving cost problems particularly in schools with low budget.

Keywords: wireless connection, informatics in education, physics teaching laboratories.

Neste trabalho mostramos como dois ou mais PC's podem ser conectados simultaneamente por meio de uma chave de internet ou um modem de celular via um cabo de ethernet de par trançado. Estes truques simples representam uma solução barata em substituição a roteadores caros. Uma conexão bluetooth pode desempenhar este papel, substituindo um cabo ethernet e possibilitando assim uma rede sem fio. Laboratórios de física ou de informática podem assim se beneficiar, reduzindo custos em localidades onde estes não estão adequadamente disponíveis.

Palavras-chave: conexão sem fio, informática na educação, laboratórios de ensino de física.

1. Introduction

Internet connection may be realized through two systems. Via fixed phone or via a mobile phone modem or the so called “Internet key” depending on the Internet connection available (GPRS/EDGE/UMTS/HSDPA). This last connection works on a single PC through a mobile phone or through the so called “Internet key”. This paper shows some simple tricks to connect two or more PC to the same mobile phone modem without particular practical drawbacks.

2. Advantages of Internet connection through mobile networks

The major advantage for mobile connection (through the so called “Internet Key” or the modem of a cellular phone) is the offers of “data transferring” payment instead of “time” payment. This commonly happens in Italy. Another advantage is a good defense from “dialers” infections because connection turns off when a dialer occurs. The major disadvantage of mobile connection is the limited use of *one modem* (phone/“internet

key”) for a single PC. Speed of the data transferring is related only to the network. The slower GPRS network gives a *typical* “speed” of about 3 – 5 kb/s.

3. The experiment

Link between two PC. It is possible through Ethernet crossed cable; configuration on each PC is very simple.

1. **Gateway parameters.** In the gateway PC (directly connected to the mobile modem) suppose Windows XP operating system. Set “connect to”, choose mobile connection to share, click on, with right mouse button and choose “properties” from Menu. Go to “advanced tab” and choose “Allow other network users to connect through this computer’s Internet connection”. Choose LAN (Local Area Network), confirm this choice and close. Let now “Connect to” and when all connections are shown, select LAN using right button of the mouse and choose “properties”. Choose

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(TCP/IP) “Internet Protocol” and set the following parameters:

“IP Address” 192.168.0.1;
 “Subnet mask” 255.255.255.0;
 “Gateway” 192.168.0.1;
 “Main DNS Server” 192.168.0.1
 and confirm these parameters.

2 **Client parameters:** on the second PC, (Windows XP operating system) select “connect to”, and select LAN (Local Area Network) and select “properties”. Select now (TCP/IP) Internet Protocol and go to “properties”. Set the following parameters:

“IP Address” 192.168.0.2;
 “Subnet mask” 255.255.255.0;
 “Gateway” 192.168.0.1;
 “Main DNS Server” 192.168.0.1
 and confirm these parameters.

Disconnect Ethernet cable and *reconnect* it; the link between two PC is now established. Each PC may be connect to Internet *simultaneously* and *independently*.

If we have N PC each having Bluetooth support a simultaneous link between them is easily possible; N PC may connected to Internet through only one mobile device (with obvious limitations in the bandwidth). Parameters are as in the previous case. Only IP Address should have a different final number in the last place to identify each PC.

Working on Windows Vista or Windows 7 operating system only little changes in Menu choices may happen, but the basic procedure does not change. Figure 1 shows a typical Lab scheme.

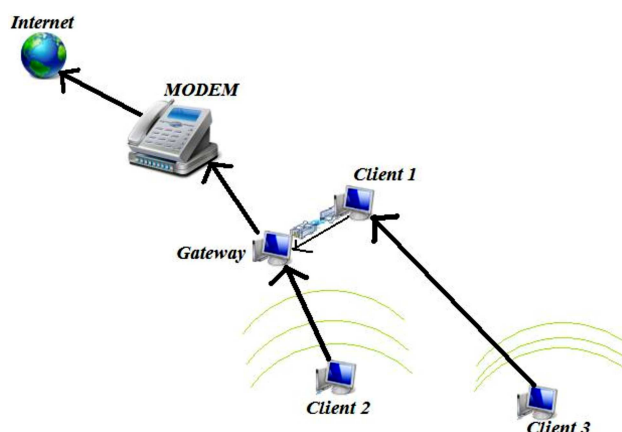


Figura 1 - A typical local network scheme. Client 1 and Gateway are here connected with crossed Ethernet cable. Client 2 and Client 3 are connected to Gateway via Bluetooth.

4. Conclusions

Low cost solutions are of interest to Institutions with low budget, particularly schools. A Physics Teacher who uses “*Physics Applets*” can simultaneously engage his students on different PCs without expensive routers. Waiting for Bluetooth 2.0, having more speed, this suggested technique may be a useful and low cost solution to the problem.

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