

Study and installation of a VOIP service on iPAQ in Linux environment

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Summary

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Study context - Aims

- ◆ Part of Compose project
 - iPAQ used as programmable platform

- ◆ Aims :
 - Multimedia applications setup
 - ◆ Audio conference (RAT)
 - ◆ Video conference (VIC)

Material means

- ◆ [iPAQ H3600 from COMPAQ](#)
- ◆ Linux distribution used : Familiar
- ◆ Use of a PC with Linux
 - Interest about this PC
 - Serial link between PC and iPAQ
 - Use of a cross compiler



iPAQ characteristics

- ◆ CPU : Intel 206 Mhz strongAMR
- ◆ Memories : 64 Mo RAM
16 Mo ROM Flash
- ◆ Speaker and microphone
- ◆ TFT colour display (4096 colours)
- ◆ Battery life up to 12 hours



Software means

- ◆ **Communication & Data transfer**
 - First step has been to setting up a **PPP connection** between the host and the iPAQ
 - Now we have a full TCP/IP network

Software means

◆ Minicom

- this is an application based on the **Kermit's** files transfer protocol.

- Minicom enables configuration of Kermit's parameters.

```
A - Serial Device      : /dev/ttyS0
B - Lockfile Location : /var/lock
C - Callin Program    :
D - Callout Program   :
E - Bps/Par/Bits      : 115200 8N1
F - Hardware Flow Control : Yes
G - Software Flow Control : No

Change which setting? █
```

Software means

◆ Minicom

```
Minicom Command Summary

Commands can be called by CTRL-A <key>

Main Functions          Other Functions
-----
Dialing directory...D  run script (Go)...G  Clean Screen.....C
Send files.....S      Receive files....R  cOnfigure Minicom..O
down Parameters...P  Add linefeed....A  Suspend minicom...J
Capture on/off....L  Hangup.....H      exit and reset...X
send break.....F     initialize Modem..H  Quit with no reset.Q
Terminal settings..T  run Kermit.....K   Dnscrn key mode...I
linelnrap on/off...U  local Echo on/off..E  Help screen.....Z
                                       scroll Back.....B

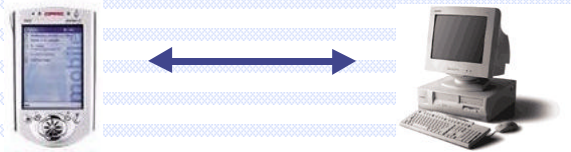
Select function or press Enter for none. █

Written by Miguel van Schoonenburg 1991-1995
Some additions by Jukka Lahtinen 1997-1999
118n by Arnaldo Carvalho de Melo 1988
```

Software means

◆ **Minicom**

- Log on the iPAQ
- Send / receive Data between the host and the iPAQ
- ...



Software means

◆ **NFS (Network File System)**

- NFS is an alternative of minicom
 - With NFS we may share the disk space of the iPAQ on the host.
- ◆ It is more easy to do data transmission between these devices.

Software means

- ◆ **Cross compiler** (arm-linux)

- Cross-compiler permit to translate an application to obtain a code which is appropriate for the IPAQ procesor (Strong arm).
- ◆ For the compilation of c language source you can use arm-linux-gcc.

Search and validation of a package

- ◆ Constraints :

- Size
- Existence of an API
- Open-source (GPL)
- Compatibility with Linux

Search and validation of a package

- ◆ Why we 've choosed RAT ?
 - Ok with previous constraints
 - Software used in Mr.Escrig's project
 - An cross-compiled version for Ipaq

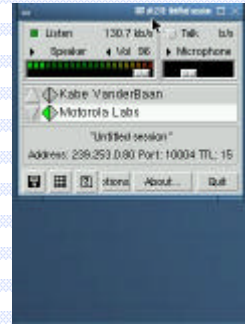
Search and validation of a package

- ◆ Robust Audio Tool :

For audio conference over Internet.

Project furtherance

- ◆ VoIP software on iPAQ
 - Mastery of RAT and tests
 - Cross-compilation of Linux sources in order to make it executable with StrongARM CPU



Project furtherance

- ◆ Problem with NFS server
 - Resolution of the problem ???
- ◆ Development of an application...
 - VoIP application more specific starting with RAT API

Bibliography

- ◆ Compaq :
 - <http://www.compaq.com>

- ◆ Familiar :
 - <http://familiar.handhelds.org/>

- ◆ Motorola :
 - <http://internet2.motlabs.com/agnode/tech/howto/>

- ◆ RAT software:
 - <http://www-mice.cs.ucl.ac.uk/multimedia/software>