

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

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Summary

- ◆ Study context - Aims
- ◆ Material means
- ◆ Software means
 - Communication – data transfer
 - Cross compilation
- ◆ Search and validation of a package
 - Constraints
 - RAT (Robust Audio Tool)
- ◆ Project furtherance
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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 strongARM
- ◆ 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 | Clear Screen.....C
Send files.....S     Receive files.....R | cOnfigure Minicom..O
comm Parameters....P  Add linefeed.....A | Suspend minicom....J
Capture on/off....L  Hangup.....H       | eXit and reset....X
send break.....F     initialize Modem...M | Quit with no reset.Q
Terminal settings..T  run Kermit.....K   | Cursor key mode....I
lineWrap on/off....W  local Echo on/off..E | Help screen.....Z
                                     scroll Back.....B

Select function or press Enter for none.█

Written by Miquel van Smoorenburg 1991-1995
Some additions by Jukka Lahtinen 1997-1999
i18n by Arnaldo Carvalho de Melo 1998
```


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 chosen RAT ?
 - Ok with previous constraints
 - Software used in Mr.Escrig's project
 - An cross-compiled version for Ipaq

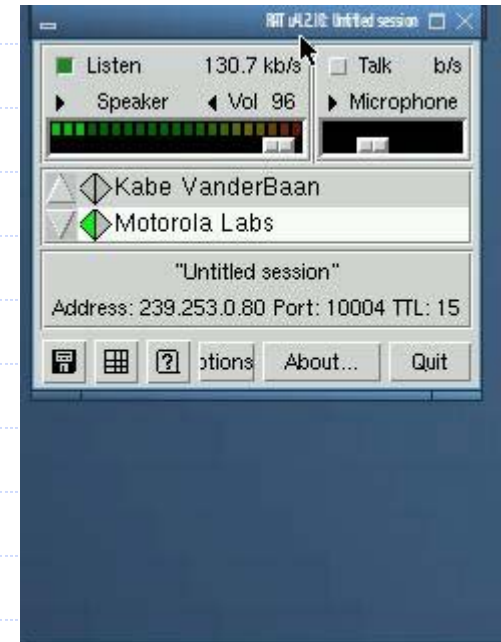
Search and validation of a package

- ◆ 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>