Host Media Processing: An Introduction

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Introduction

- HMP: Host Media Processing
- Software-only solution
- New way to deploy telephony apps
Speech Recognition

Why HMP?

Handles VoIP without specialized hardware

- Network card
- SIP
- Replacing telephony card
Benefits of HMP

Besides VoIP?

• Off the shelf computers
• Add licenses as you go
• No need to over-purchase
Benefits of HMP

Still more reason - Hybrid Networks

• Mixing traditional Telco and VoIP
• Analog/T1/VoIP
• Try, but not commit.
HMP

What is it doing?

Typical telephony functionality

• Play and Record
• Continuous Speech Processing
• HMP CPU load per channel 14Mhz
HMP

What is it doing?

On an analog line

• Play and Record
• Continuous Speech Processing
• Echo Cancellation
• HMP CPU load per channel 44Mhz
HMP

What is it doing?

With VoIP

- Play and Record
- Continuous Speech Processing
- RTP Processing
- HMP CPU load per channel 21Mhz

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What is it doing?

RTP  Real-time Transport Protocol

• Jitter – out order packets
• Packet Loss
• Effects on Speech Recognition

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Speech and VoIP?

Jitter

- Mixes audio up
- Boat {B OW T}
- ASR hearing 2 things at once
HMP

Speech and VoIP?

Packet Loss

• Abrupt Transitions between sounds
• HMP smoothes audio
What does this mean?

Processor Cost

- Each Channel uses 21 MHz
- 96 Channels ~ 2GHz
HMP

2.0 GHz?

Moore's Law is working for us…

• Intel and others producing Dual, Quad and beyond processors.
• Almost as fast as 2 or 4 regular processors.
# Processors

<table>
<thead>
<tr>
<th></th>
<th>Total MIPS Single Processor</th>
<th>Total MIPS Dual Processor</th>
</tr>
</thead>
<tbody>
<tr>
<td>P4 2.0Ghz</td>
<td>2.0 GHz</td>
<td>4.0 GHz</td>
</tr>
<tr>
<td>P4 2.0Ghz HT</td>
<td>2.6 GHz</td>
<td>5.2 GHz</td>
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<tr>
<td>Dual Core 2.0Ghz</td>
<td>4.0 GHz</td>
<td>8.0 GHz</td>
</tr>
<tr>
<td>Dual Core 2.0Ghz HT</td>
<td>5.2 GHz</td>
<td>10.4 GHz</td>
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[SpeechTEKI 2006]

LumenVox
Speech Understood
HMP Platform Integration

- Vertical
  - IP-PBX

- Digium
  - Asterisk, Open Source PBX

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Core Technology Providers

- Spearheaded by Intel
- Aculab, Cantata, Eicon, NMS, Uniqall, Pika and others.
Going Forward

How should you choose the HMP Technology?

- Overhead?
- Is VoIP addressed?
- Licensing flexible?
- Supports Hybrid?
- Any limitations?