

FreePBX / Asterisk on Raspberry PI

BCS Northamptonshire Branch

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FreePBX / Asterisk on Raspberry PI

VOIP Technology



- **Advantages of VOIP systems – consumer and business**
- **VOIP Services**
- **VOIP trunks**
- **VOIP telephones**

VOIP Technology

VOIP Advantages

- **Functional integration of services**
- **Physical decentralisation of services**
- **Enhancement of services**
- **Open source**

VOIP Technology

VOIP Services

- **Telephony / FAX** - G722, G711, G729
- **Videophone** - H323
- **Video Conferencing**
- **Cloud PBX**
- **IVR – recording/automation**
- **Surveillance**

- **Designed for use by Cisco Call Manager (now CUCM)**
- **Proprietary but has some support within asterisk**
- **Only used for telephone/videophone devices**
- **Useful for exploiting features on Cisco phones**

- **Significant industry investment – well standardised**
- **Multimedia**
- **Not an optimal design for networking**
- **The dominant VOIP networking and switching protocol**
- **Security issues - many ports – requires session border controller**
- **Difficulties traversing NAT – requires session border controller**
- **Poor layer 2/3 separation – difficulties on errored call clear-down.**

- **Purpose designed as a trunk protocol - Asterisk project**
- **Limited investment in early stages of standardisation**
- **Few but increasing IAX/IAX2 service providers**
- **Multiple calls and signalling over single L4 port connection**
- **Easy NAT traversal - NO session border control required**
- **Voice and Video calling using recognised codec standards**

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Raspberry PI Build and Configuration



Raspberry PI Build and Configuration

SD card build and hardware

- **Complete image for 4GB SD card available**
- **Instructions on - <http://pbxbook.com/voip/raspbxmac.html>**
- **Standard PI - no special additions or modifications**
- **Cisco phones available on Ebay – 7911, 7941, 7961, 7971**
- **Phones powered via injectors or POE switch IEE 803.af**
- **PSTN line connected via analogue to SIP adapter**

Raspberry PI Build and Configuration

Configuration

- **Configured by FreePBX web interface or low level Asterisk files.**
- **Trunk configurations SIP / IAX2**
- **Extensions setup using Asterisk files – requires TFTP and DHCP.**
- **Major part of configuration is the dialling plan**
- **Phones powered via injectors or POE switch IEE 803.af**
- **Other services possible - DISA, IVR, Conferencing etc.**

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FreePBX Demonstration

The background of the slide features several overlapping, wavy lines in shades of green and yellow, creating a dynamic, abstract pattern that flows from the bottom left towards the top right.