

PANEL: The Future of IAX

Ed Guy, Chief Scientist, pulver.com
Dimitri Panasevich, Director, AsteriskOUT.com
Ravi Sakaria, President & CEO, VoicePulse
Mark Spencer, President, Digium/Asterisk

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Why IAX Matters

Ed Guy

**Chief Scientist,
Pulver.com
edguy@pulver.com**

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Outline

Compare Protocols, Not Implementations

- ◀ History
- ◀ Function – Operational Model
- ◀ Lawful Access
- ◀ Scalability
- ◀ Extensibility
- ◀ Encoding
- ◀ Media Transport
- ◀ Network Realities – NAT

One view of SIP?



Not Really

More Accurate View



Not Really either

One View of IAX2



More Accurate View of IAX2



Heritage

SIP

◀ IETF

- Mmusic working Group ~'98
- Rough consensus Process
- Principles
 - ▶ Leverage other ietf work
 - ▮ No duplication
 - ▶ Ipv6
 - ▶ Focus on end-to-end
 - ▶ Separation of concerns
- SIP/RTP combination
- Documentation
 - ▶ >2000 RFC pages
 - ▶ several books on amazon

◀ Text

IAX

◀ Mark Spencer's Asterisk

- Mark's-ist Process
- Pragmatic Approach
 - ▶ Make it work
 - ▶ No fear of duplication
- Documentation?
 - ▶ May the source be with you.

◀ Binary

Function – Operational Model

SIP

- ◀ Trapezoidal model
- ◀ Architectural Building blocks
 - Authentication
 - Authorization
 - Proxy
 - Registrar
 - Redirect
- ◀ Media
 - separate
 - Not predefined in protocol
 - end-to-end
- ◀ Many ways to achieve result

IAX

- ◀ Point-to-point-to-point
 - Authorization/Authentication
 - Registration
 - streaming/trunking
 - Assured transfer
- ◀ Predefined media
 - Voice
 - Video
 - DTMF
 - Presense
- ◀ Trunking model
- ◀ Control and media travel together
- ◀ TFTP-like function

Lawful Access

SIP

- ◀ End-to-end challenges
 - Packet-monitor
 - Reroute

IAX

- ◀ Trunking model makes is simple.

Scalability

SIP

- ◀ Session-oriented order
- ◀ Media separated
- ◀ Stateless operation

IAX

- ◀ Combined media/signaling is limiting
- ◀ Per link ordering
 - Control messages are sequenced
 - Most Media is not
- ◀ Stateful nodes
- ◀ More efficient media transport/trunking

Extensibility

SIP

- ✦ SIP handles extensible payloads
- ✦ SDP/RTP handles any codec
- ✦ Intermediate nodes need not understand payload or codec

IAX

- ✦ Predefined CODECs
- ✦ Get Mark+team to write/release more code
- ✦ Each node must understand function or prior node must translate.

Encoding

Tastes Great -- Less Filling

SIP

- ◀ Text based
- ◀ Easily read by humans
- ◀ Trivial extension

IAX

- ◀ Binary
- ◀ Easily read by computers
 - Little room for error
- ◀ More difficult to extend

Media Transport

- ◀ Extensible streams
- ◀ Many streams per session
- ◀ Limited by endpoints
- ◀ Predefined
- ◀ 10 Predefined Slots
- ◀ Limited by way-points

SIP and NAT (in the past)

[picture of ostrich
with head in sand]

Ipv6 will solve problem

Network Realities – NAT

SIP/RTP

- ◀ Three UDP Ports
 - Different destinations
 - Media Ports change
- ◀ Clipping issues
- ◀ Transfer is 'best effort'
- ◀ add-on NAT Strategies
 - ICE
 - STUN
 - TURN
 - Outbound proxy
- ◀ Pin-hole maintenance required
- ◀ Multiple clients behind one NAT are problematic

IAX

- ◀ One UDP port with same destination for signaling and media
- ◀ Confirmed transfer model.
- ◀ Pin-hole maintenance required
- ◀ Multiple clients behind one NAT are problematic

Summary

USB Swiss Army Knife



www.Vantagedirect.co.uk

Telephone: 0870 744 2468



Summary

But wait, there's more....



IAX Matters Because

◀ IAX works

- It is very efficient
- Solves real problems
- IAX has foothold in open-source space
- Easy to embed

◀ IAX Needs:

- Documentation
- Process & Controls
- More diverse implementations

▶ Expect these in the future.