

→ AARNet 2004

IP Telephony Working Group Session 1 – Up-date on Current Activities

QUESTnet 2004
6th July



→ Introduction

- Introduction
 - IPTEL is AARNet's IP Telephony Working Group.
 - A small "steering" committee interacts with a larger community that is the IP Telephony Working Group.
 - The Steering Committee was formed by invitation from AARNet as a result of the original 2001 planning meeting.
- Operation
 - The Steering Committee meets by video conference, email and occasional face-to-face meetings.
 - It reports to the CEO of AARNet Pty Ltd.
 - Contact and interaction with the Steering Committee can be made directly to its members or by joining the mailing list.
ipTEL-I@aar.net.edu.au
 - The web site is the official record of the group.
<http://www.aar.net.edu.au/engineering/wgs/ipTEL/>



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→ Steering Committee Members

- Rod Ibell (Chair) - University of Southern Queensland
- Steve Cox - Flinders University
- Ruston Hutchens - AARNet Pty Ltd
- Stephen Kingham - AARNet Pty Ltd
- Richard Vanderwaal - Swinburne University of Technology
- Vacancy - **Is this You?**
- Ann Pettigrew - AARNet Working Group Support Officer



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→ Job Vacancy

- **Expressions of Interest are invited to fill a vacancy on the AARNet IP Telephony Group Steering Committee.**
- As a result of recent appointments within AARNet a vacancy exists in the IP Telephony Group Steering Committee.
- If you are interested in extending your horizons in this exciting and rewarding field and believe that you are in a position to offer your services, expertise, knowledge and of course some of your free time to join us in our quest for the 'Holy Grail' of the IP Phone, please send us your details including a summary of your current role, background, and experience, particularly in the field of IP Telephony.
- Details about the group can be found at: <http://www.aar.net.edu.au/engineering/wgs/ipTEL/>
- Also, come and find us for a chat at the APAN/QUESTNET2004 Conference:
<http://www.cqu.edu.au/questnet2004/>
- Please forward details to :
Working Group Support Officer
Email ann.pettigrew@aar.net.edu.au
Telephone: (02) 6222 3536



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→ Current Issues under Review

- **Dialplan**
- **IP to IP Gateway**
- **Peering with other Carriers**
- **Call charges**
- **VoIP Billing Model**
- **SIP support alongside H.323**
- **Miscellaneous**



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→ Dialplan – Local

- **Local Dialplan:**
- **Voice calls:** (from registered nodes)
National calls to PSTN use the ACA Australian Number Plan.
 - 0 [2,3,4,7,8] XXXX XXXX state prefix + 8 digit numbers, or
 - 61 [2,3,4,7,8] XXXX XXXX E164
- **H.323 calls:** (via the public GK)
All use the E164 number. To accept calls to a terminal in your network, you must use your own Gatekeeper.
 - 61 [2,3,4,7,8] XXXX XXXX, or
 - H.323 alias or ID. eg Rod.Ibell@usq.edu.au



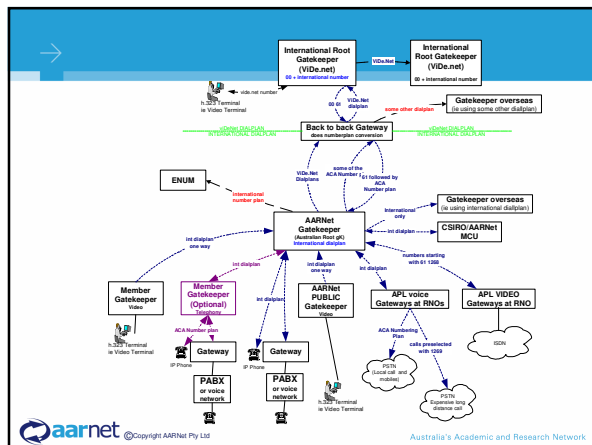
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→ Dialplan – International IP

- International Dialplan:
- No International VoIP at this time, although we tried.
 - SIP and ENUM will change this.
- H.323 access via the international GKs
 - International H.323 sponsored by Videonet
 - Uses '00' prefix + E164 number, eg 00 61 2 6222 3595
 - Use this for international conferences.
 - Called a GDS number - 'Global Dialling Scheme'
- To overcome these complications of another number plan we look to the IP to IP GW.

→ Dialplan - routing

- Current PSTN dialplan relies on the physical location to route the call along with prefix tables in PABXs and gateways etc.
- Gatekeepers still use the prefix tables.
- ENUM is to supply dynamic mapping of number to IP device.
- ENUM Status:
 - The closing date for EOIs for the ACA trial Tier-1 Registry Operator for the domain '1.6.e164.arpa' is 7th July.
 - http://www.aca.gov.au/telecomm/telephone_numbering/enum_nsg2/eoi.htm
- e164.org:
 - <http://www.e164.org/about.php>
 - E164.org is a non-profit ENUM registry for Telephone Number use on the Internet and Internet type networks.



→ IP to IP Gateway

- What is the IP to IP Gateway?
- Where is it used?
- Current trials/tests.

→ IP to IP Gateway - What is it?

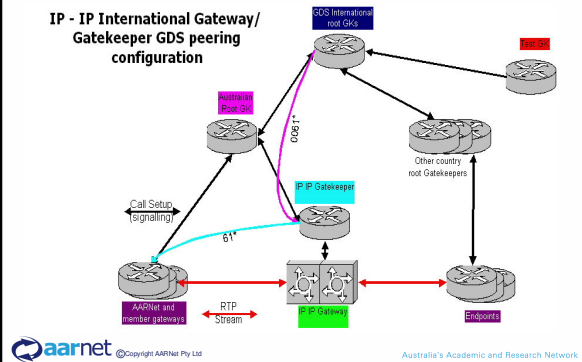
- A special router designed specifically for VoIP to VoIP interconnection.
- Essentially two(2) IP-PSTN gateways back to back.
- H.323 – to – H.323 & SIP
- RTP Stream transparency or bypass. QoS control.
- No Codecs, no conversion / end-to-end negotiation.
- IP Address translation (proxy format).
- Dialplan translation.
- Provides IP network boundary security.

→ IP to IP Gateway – Where is it used?

- At the network interface between carriers.
- Could be anywhere you want to provide a distinction between VoIP networks for:
 - Security
 - Admission control
 - Billing
 - Dialplan adjustments/corrections
 - VoIP Firewall.

→ IP to IP Gateway – Current trials/tests.

IP - IP International Gateway/ Gatekeeper GDS peering configuration



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→ Peering with other Carriers

- Where are we?
- With the IP to IP Gateway in place we can now start peering trials.
 - Comindico?
 - Agile?
 - Optus?
 - Other ??

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→ Call Charges

- AARNet reduced VoIP service charges in February 2004.

	old	new
1. On-net (calls between participating members)	1 cent/minute	1c
2. Long distance calls to (capital cities other than 1 above)	8 cent flagfall plus 1 cent/minute.	6c
3. Long-Distance calls in Australia (other than 1 and 2 above)	8.7 cents/minute (no flag fall)	1c
4. Calls to mobile phones	10 cent flagfall 24 cents/minute	7c no flag 25c

- See: <http://www.aarnet.edu.au/services/charges.html>
- If you have a better offer, let AARNet know.
- Call AARNet for a quote on any Telephony traffic.

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→ VoIP Billing model

- AARNet billing model has changed to a subscription base – will be phased in from 1st July 2004

- a subscription for traffic between AARNet clients and equivalent organisations (nationally and internationally)
- an access charge for each connection to AARNet (to cover the cost of equipment at the member's premises);
- a charge for "commodity" use (between AARNet clients and other "off-net" organisations) which is largely subscription based, with a low marginal charge for traffic above that covered by the commodity subscription.

- For Voice and Video charging

– Watch this space.

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→ SIP support alongside H.323

- What is SIP?
- Why are we looking at SIP?
- Where does it fit into AARNet?
- Where to go for more information.

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→ SIP – What is it?

- SIP - "Session Initiation Protocol", competes/replaces H323.
- A control/signalling protocol not a communications protocol
 - (IETF standard. c.f H.323 – ITU standard).
- Is an end-to-end protocol.
- Has its roots in the HTTP protocol.
- Not just Telephony – also supports video, presence, messaging.
- SIP entity is the URI – "Uniform Resource Identifier"
 - sip:fred@aarnet.edu.au
 - sip:0262223595@aarnet.edu.au
- A key feature is terminal-type negotiation
 - i.e. How to reach the other party:
 - PSTN, IP telephony, Mobile, Video etc.

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→ SIP – Why are we interested?

- Developing as the protocol of choice by most vendors.
- It helps with problems and weaknesses of H.323
 - Limitations of H.323 in the MAC and Unix world;
 - Authentication with gateways;
 - QoS management.
- To raise the skill level of AARNet members.
- Easier development.
- Cheaper costs for research and experimentation.
- Cheaper for deployment ???

→ SIP – Where does it fit into AARNet?

- To run in parallel with H.323;
- AARNet gateways already support SIP;
- combined work with both the IPTel and Video over IP groups;
- a few universities have pilots running;
- proposal to run SIP workshops within AARNet;
- first SIP workshop held on Saturday 3rd July 04;
- develop a SIP implementation strategy for AARNet.

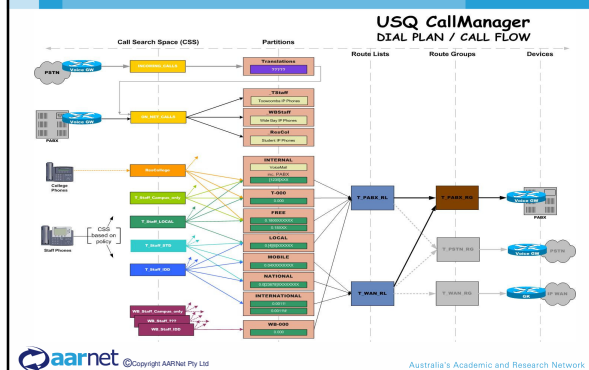
→ SIP – Where to get information

- Sites for more information:
 - <http://www.iptel.org/>
 - SER – SIP Express Router
 - <http://www.cs.columbia.edu/sip/>
 - An extensive repository of information and pointers to all aspects of SIP development and implementation
 - <http://voip.internet2.edu/SIP.edu/>
 - 'To promote convergence of voice and email entities'
 - <http://www.asterisk.org/>
 - 'Asterisk™ is a complete PBX in software'
 - <http://www.vovida.org/>
 - Open source communications - VOCAL Package.

→ Miscellaneous & BOF items

- Gatekeeper Tips
- GK peering and call routing via H.323 ID
 - usually just with prefix tables
 - remote zones allow calls via 'ID' to registered devices
- With my gatekeeper peered to the AARNet GK and with this entry:
 - [zone remote edu.edu.au 203.22.212.245](http://www.aarnet.edu.au/zone-remote-edu-edu.au)
- I can now call a terminal registered with the AARNet public GK from a PC client. e.g.
 - Steve.Cox@edu.au
- And Steve can call me as rod.ibell@usq.edu.au
- CallManager Dial/Route Plans
 - 'Networkers' presentation V V T- 410:
 - [Advanced Dial Plan Design for IP telephony Networks](http://www.aarnet.edu.au/Advanced-Dial-Plan-Design-for-IP-telephony-Networks)

→ Dialplan example



→ IPTEL Working Group Contact Info

- IPTEL Working Group web site
 - <http://www.aarnet.edu.au/engineering/wgs/iptel/>
- Subscribe to the mailing lists of AARNet Working Groups.
 - <http://lists.aarnet.edu.au/mailman/listinfo/>
- Inform the Steering Committee about any activities that you would like the group to investigate.
- Share your own experiences, including problems and solutions, with the group.
 - Get involved with this and other AARNet Working Groups.
 - <http://www.aarnet.edu.au/engineering/wgs/>
 - Video over IP
 - IPv6
 - QoS
 - Multicast
- Contact the Working Group Support Officer.
 - ann.pettigrew@aarnet.edu.au

