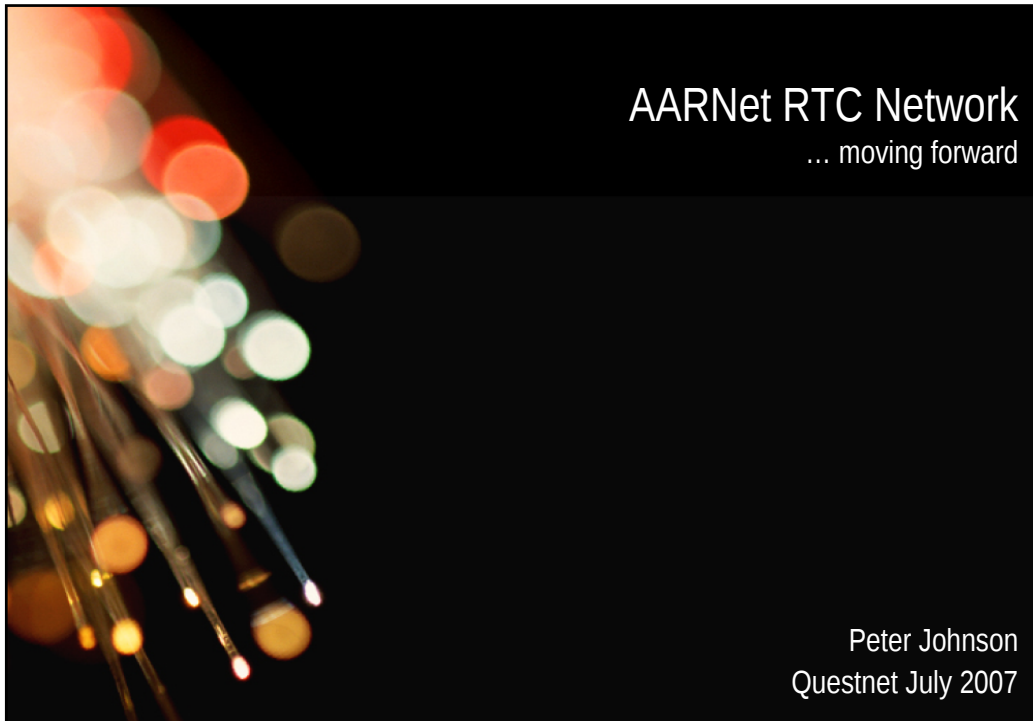




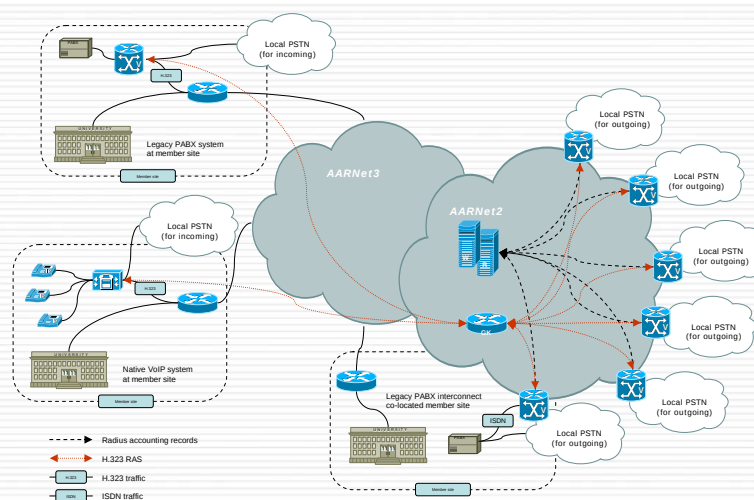
	AARNet Copyright 2007
	AARNet RTC infrastructure review
	• Background • Existing network • Motivation for change • Concept • New network • Realisation • ITSPs, SBCs • Connecting and rules of engagement • Moving forward - Services • Feedback
2	

Background

- AARNet VoIP service
 - Established around 8 years ago following a CSIRO project for voice over IP services
 - Essentially a toll bypass service
 - VoIP access via member connection to the AARNet IP network;
 - PSTN access via H323 voice gateways distributed nationally;
 - H323 gatekeepers used for routing and call admission control;
 - Charging mechanisms based on radius;
 - Web based user portals for reporting, billing, and performance monitoring.
- Ad-hoc growth for video, multipoint, others

3

Existing service network



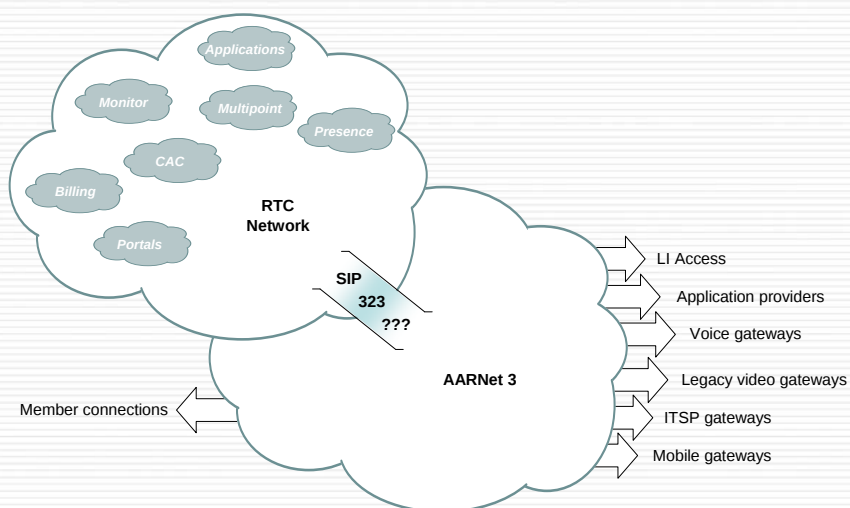
4

Motivation for change

- Existing network
 - Single service only
 - Runs on A2, aged equipment
 - Difficult to manage, complicated charging mechanism
 - Limited flexibility, lacking LI capabilities
- Desired network
 - Multiple services
 - Multiple protocols
 - Overlay on A3
 - Cost effective, scalable, integrated
 - Provides for LI

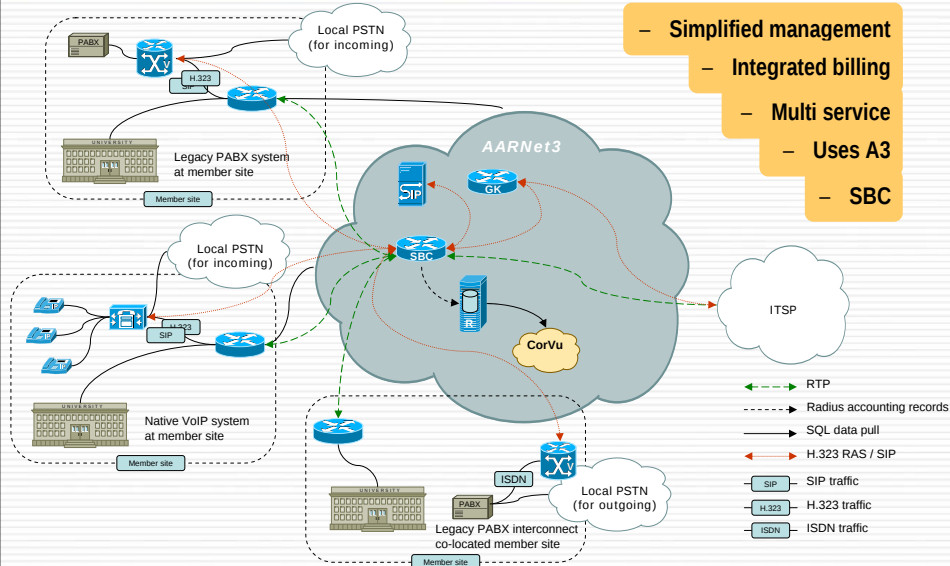
5

Concept for the network



6

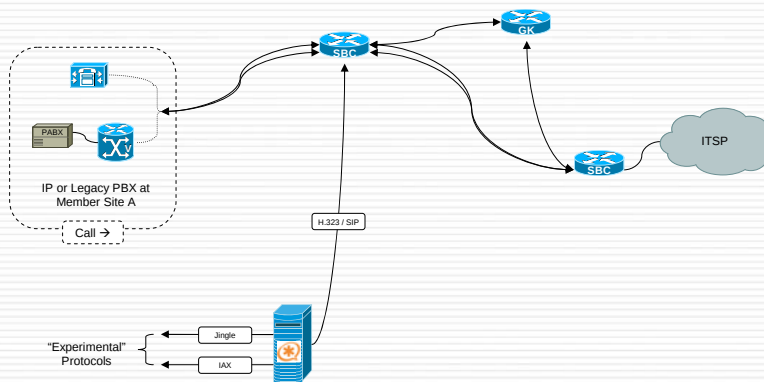
RTC Network



7

Experimental services

- Non commercial sandpit access runs in parallel with true services



8

Realisation

- August 2007, ITSP interconnect trial SBC gateway for voice
 - Route test traffic only (via internet)
 - Connect SBC radius records with billing system
 - Reconcile carrier billing with AARnet records
- October 2007, direct connection to ITSP
 - Evaluate service quality
- November 2007, migrate member traffic via ITSP
 - Decommission ISDN voice gateways
- December 2007, gatekeeper consolidation, SBC for member access
 - Video and AUroot gatekeepers merge
 - Introduce SBC on member edge
- 2008
 - SIP on the member edge
 - New services
 - Sandpit

9

ITSPs

- IP Telephony Service Providers
 - Call termination service
 - Hand off voice traffic as an IP stream
 - ITSP terminates it in the PSTN
 - Call collection service
 - ITSP collects calls in local areas
 - Routes to AARNet
 - Interconnect methods
 - Back to back TDM gateways (some carriers want this)
 - SIP trunks, public internet routed or direct connection
 - Issues
 - Number range ownership
 - Connecting
 - Security

10

SBCs

- Session border controllers
 - Interface one network to another
 - Terminate session on network 1, establish session on network 2
 - Deal with network addressing issues and firewalls
 - Isolate one network from another
 - Provide central point for call detail records
 - Provide for legal intercept requirements
 - Basic SBC may just simulate back to back TDM
 - High end SBC may programmatically change protocol events

11

What it means to you

- When complete
 - Support for emerging protocols, technologies
 - Better than competitive prices – value for membership share
 - Accurate billing
 - Less technical problems
 - Quicker response to any that do occur
 - New services
- Right now
 - Some changes, rules of engagement

12

Rules of engagement (1)

- Dialed numbers (B num)
 - Change from 11 digit numbers 61xxxxxxxx to 10 digit 0xxxxxxxx
 - National numbers should always be dialed as 10 digits (ie: area code followed by local number)
 - Dialed numbers with less than 10 digits will not be routed by AARNet unless they match a special service number
 - Dialed numbers starting with 00, 01, 04, 05 will route direct to the PSTN gateway
 - Dialed numbers starting with 02, 03, 07, 08 will route to PSTN unless they match another member
 - Dialed numbers starting with 06, 09 will not be routed
- Calling numbers (A num)
 - Must always be full 10 digit national number
 - Internal extensions not acceptable

13

Rules of engagement (2)

- Gateway access
 - Gatekeepers must always be queried for gateway addresses
 - Gateway addresses may change without notification
 - Gateway addresses will not be publicised
 - (During first stage, RTP may be to/from gateway and thus it is still apparent, but call setup may be prevented to this IP address)

14

Rules of engagement (3)

- Public access (free-love gatekeeper)
 - Access to be controlled?
 - Need to ensure all A numbers are valid?
 - Perhaps through registration of a number from the members indial range

15

Moving forward - Services

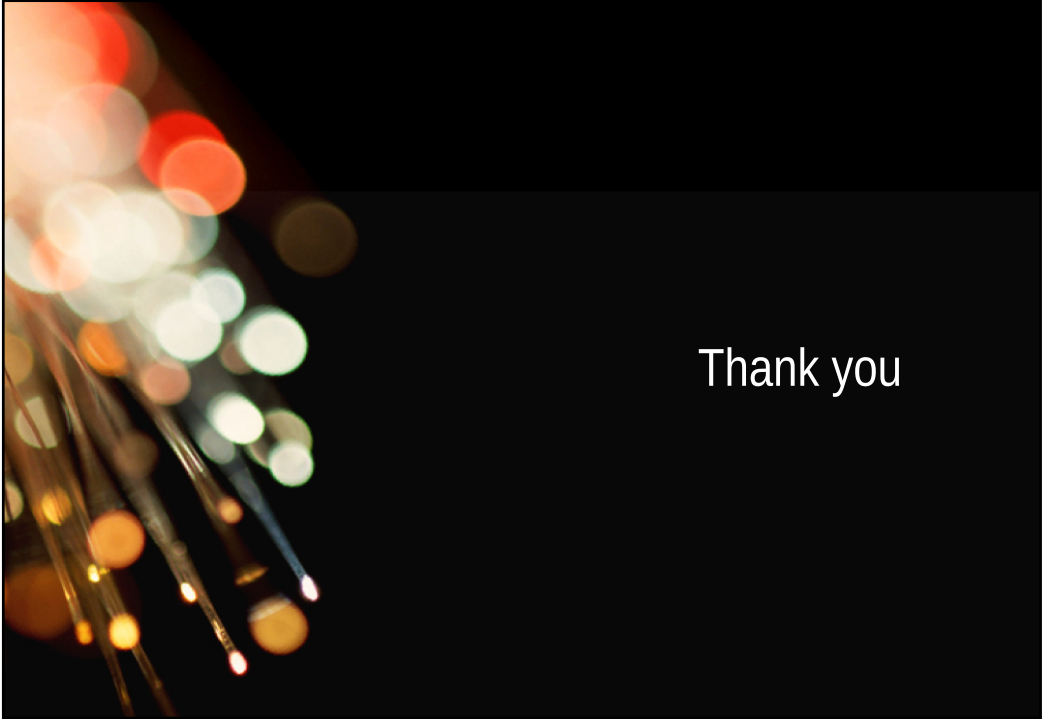
- First ... service criteria
 - Will the service add value to the member organisation?
 - Will the service grow AARNet on net traffic?
 - Can AARNet charge a commercially competitive tariff for the service?
 - Can AARNet operate the service without losing money?
 - Service ideas
 - Hosted voice, Managed voice
 - Voice and video mail
 - PSTN outdial backup, indial backup
 - 3G video gateway
 - Pre paid (calling card)
 - Differentiated voice services
 - Homogonised presence
- } What's desired ?

16

Feedback

- Real time communications BOF session
 - Wednesday, 5.10 to 6pm
 - Mossman room
- Please come along and discuss:
 - What you would like to see from an RTC network
 - What services might interest you
 - Talk about rules of engagement
 - Ask technical questions
 - Answer technical questions

17



Thank you