Non Interworking between SIP and H.323, MGCP, Megaco/H.248

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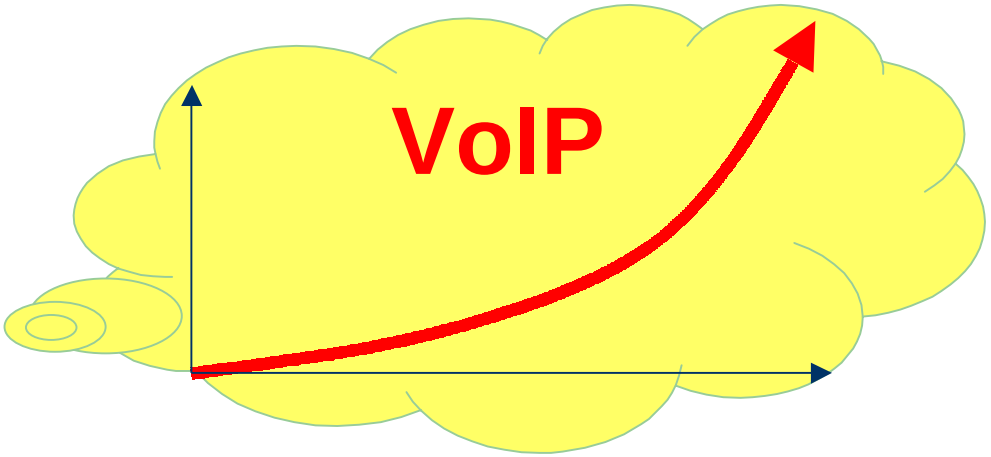
The Starting Point…



$$$ → SIP
$$$ → H.323
$$$ → Proprietary

"Net Heads"

$$$ → MEGACO
$$$ → MGCP
$$$ → …

"Bell Heads"

Assumption…

SIP, H.323, MEGACO, MGCP, …

1. Protocols will co-exist for a while

2. Some need for interworking...

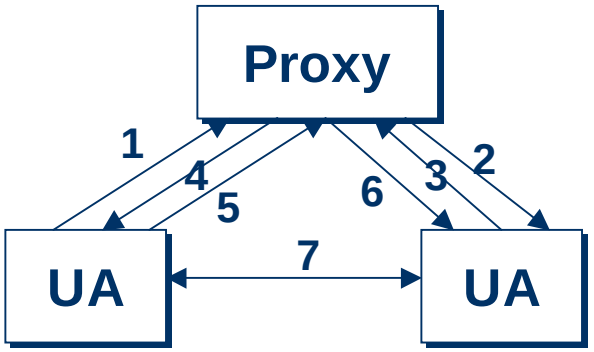
Reminder: Protocol Architectures

- H.323 and SIP compete
- Both complement MEGACO

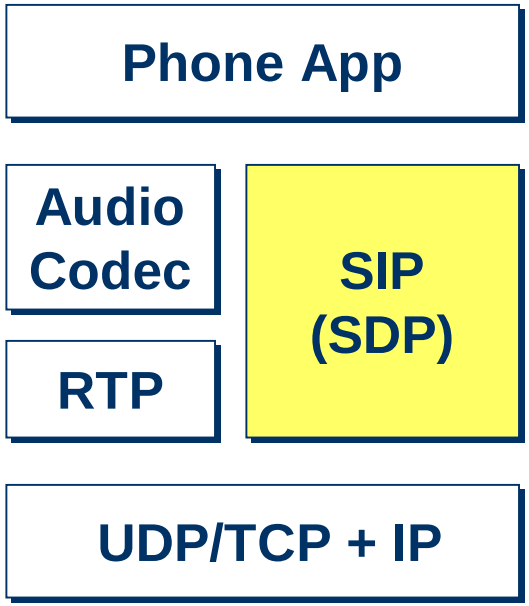
H.323 / SIP	H.248 / MEGACO
❖ Smart endpoint, dumb network ❖ Distributed service creation ❖ Many points of control	❖ Dumb endpoint, smart network ❖ More centralized service creation ❖ (Few) central control point(s)

- Any of these protocols suffices to build a network!

SIP Call Signaling

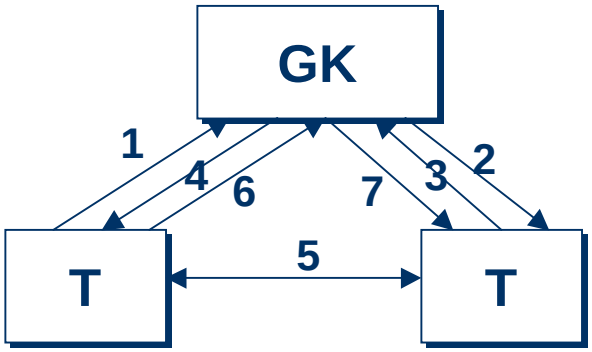


1 and 2: INVITE sip:jo@ipdialog.com
3 and 4: 200 OK
5 and 6: ACK
7: Media streams



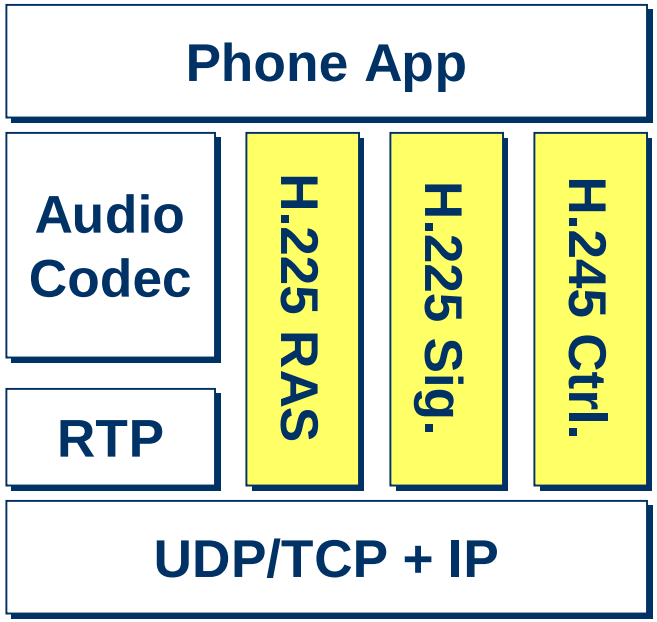
A simple SIP phone

H.323 Call Signaling



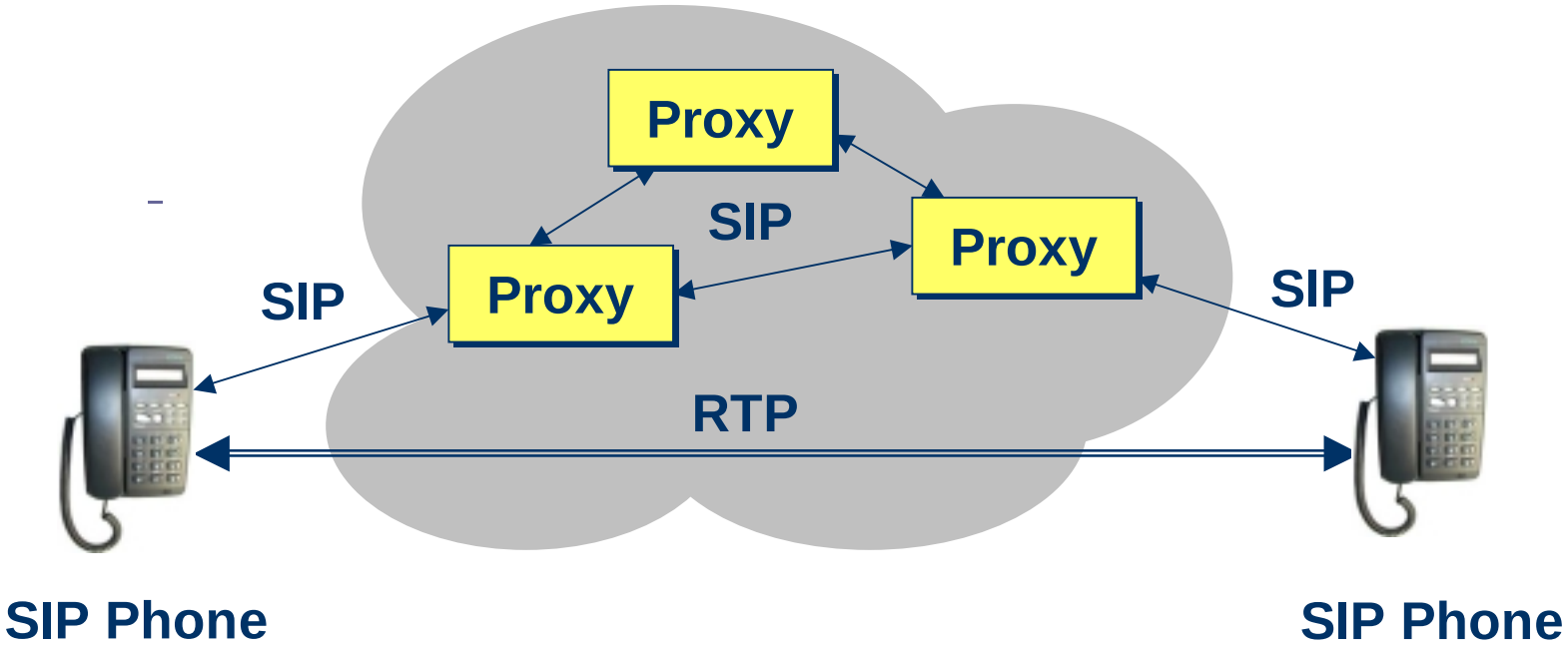
GK routed Fast Connect

1: Setup (fastStart, earlyH245Cntr)
2: Setup (fastStart, earlyH245Cntr)
3: Proceeding (fastStart earlyH245Cntr)
4: Proceeding (fastStart earlyH245Cntr)
5: Media streams
6 and 7: FACILITY (H245Cntr)



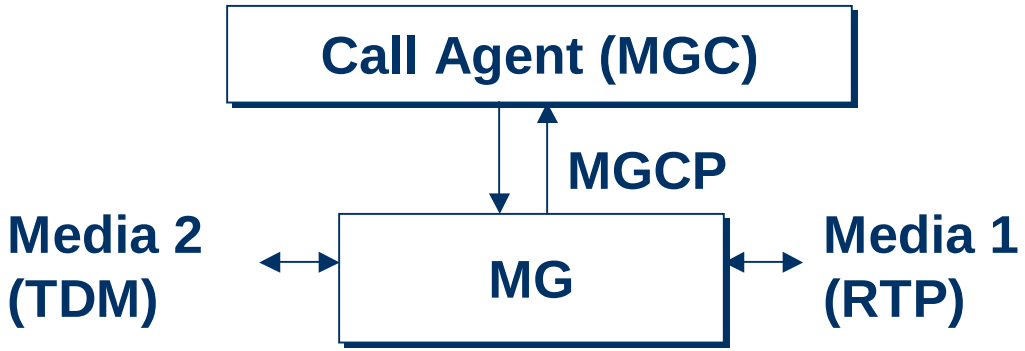
A simple H.323 phone

SIP (and H.323) Telephones



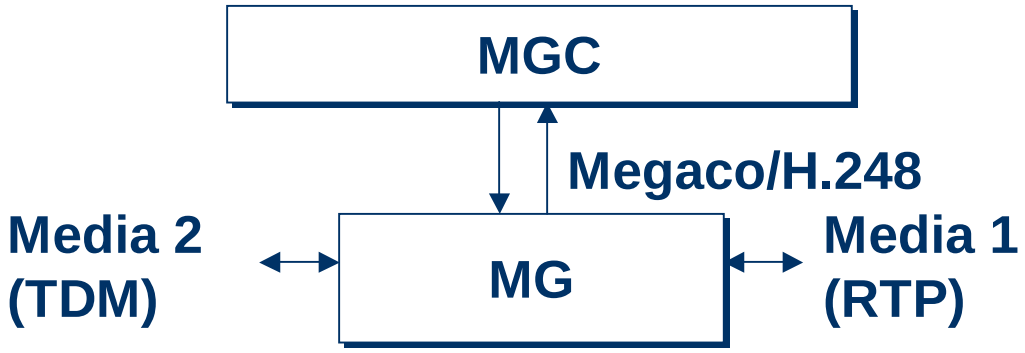
MGCP: Media Gateway Control Protocol

- Endpoint configuration (agent ➔ gateway)
- Notification request (agent ➔ gateway)
- Create connection (agent ➔ gateway)
- Modify connection (agent ➔ gateway)
- Delete connection (agent ➔ gateway or gateway --> agent)
- Audit endpoint (agent ➔ gateway)
- Audit connection (agent ➔ gateway)
- Notify (gateway ➔ agent)
- Restart in progress (gateway --> agent)

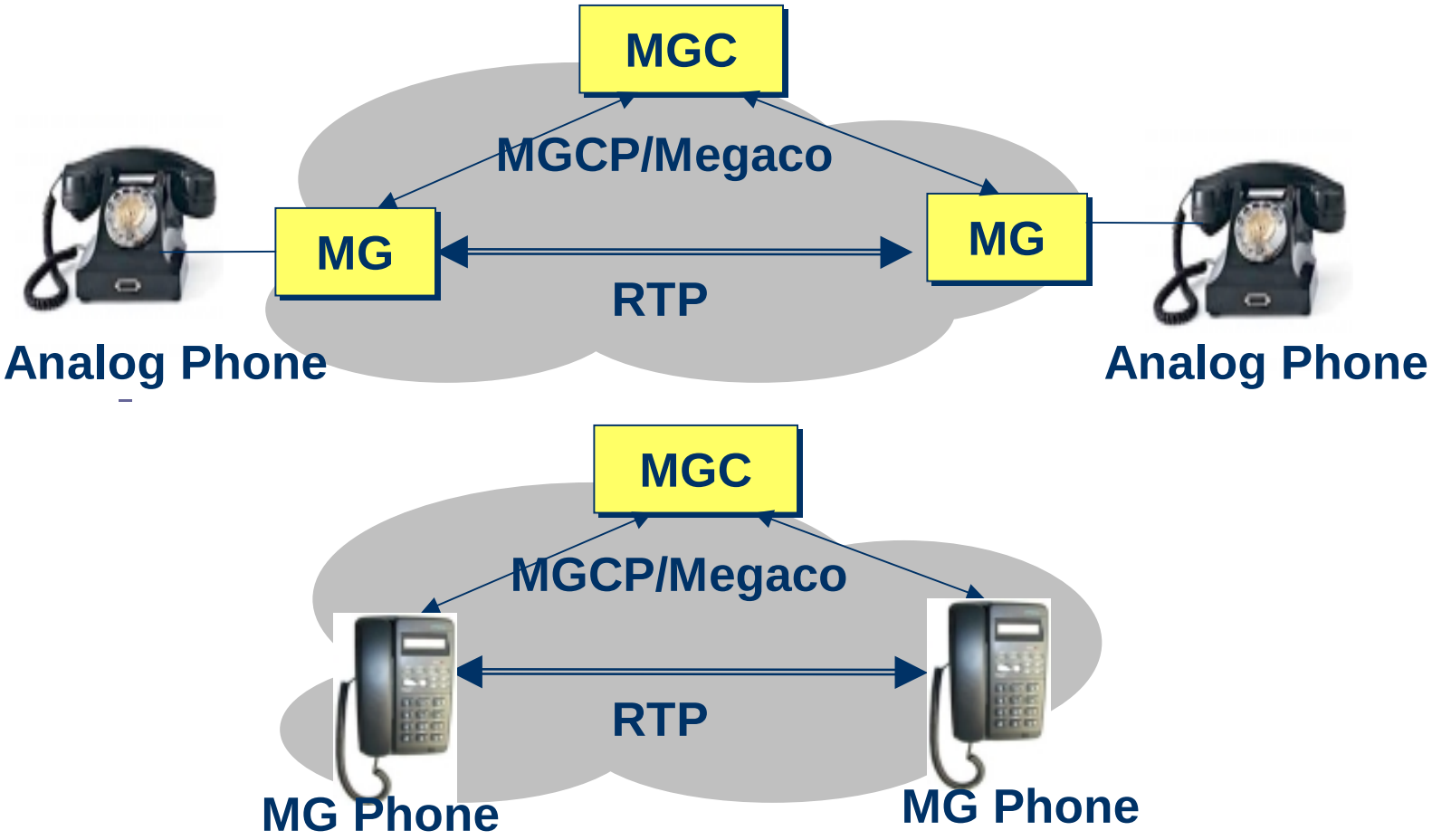


Megaco – Media Gateway Control

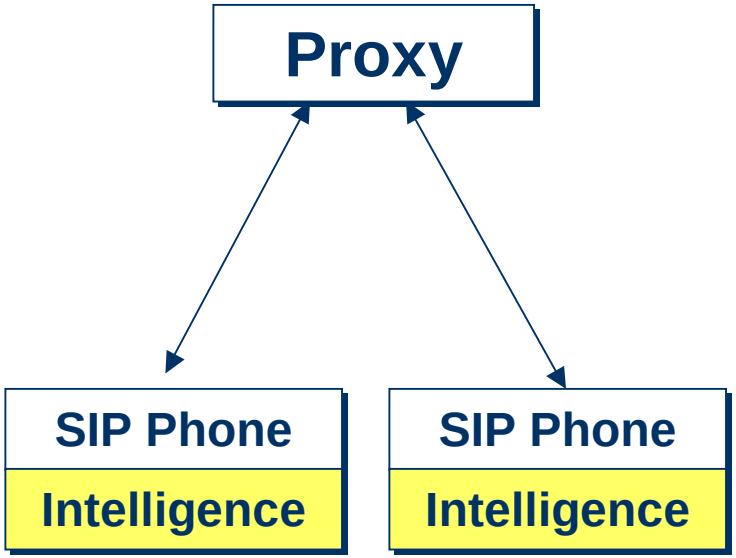
- Add (MGC ➔ MG)
- Modify (MGC ➔ MG)
- Subtract (MGC ➔ MG)
- Move (MGC ➔ MG)
- AuditValue (MGC ➔ MG)
- AuditCapabilities (MGC ➔ MG)
- Notify (MG ➔ MGC)
- ServiceChange (both directions)

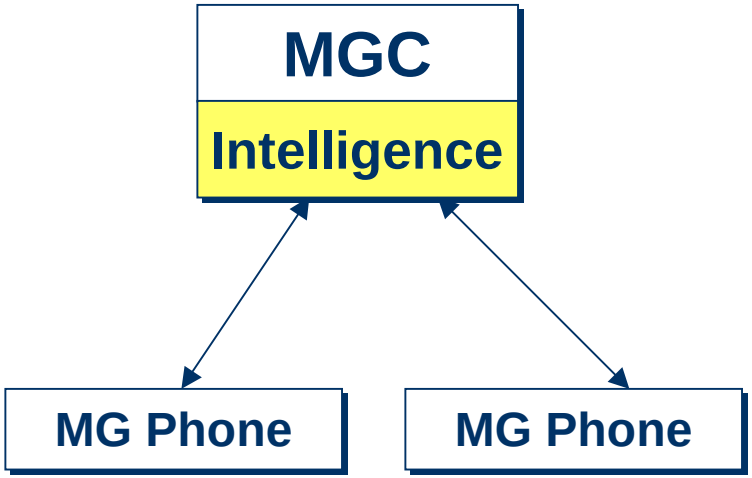


MG Telephones



SIP (H.323) Phone vs MG Phone

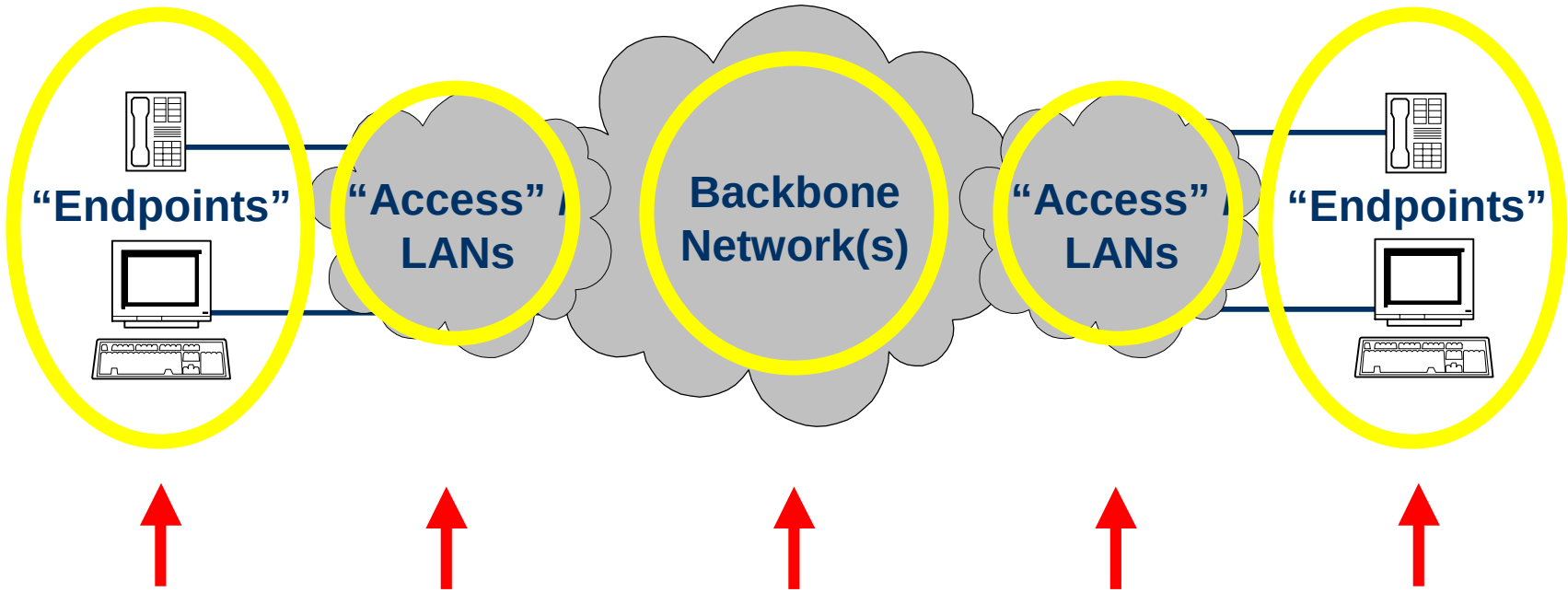




SIP phones can make calls to other SIP phones without Proxy

MG phones cannot make calls to other MG phones without MGC

Alternatives in your Network

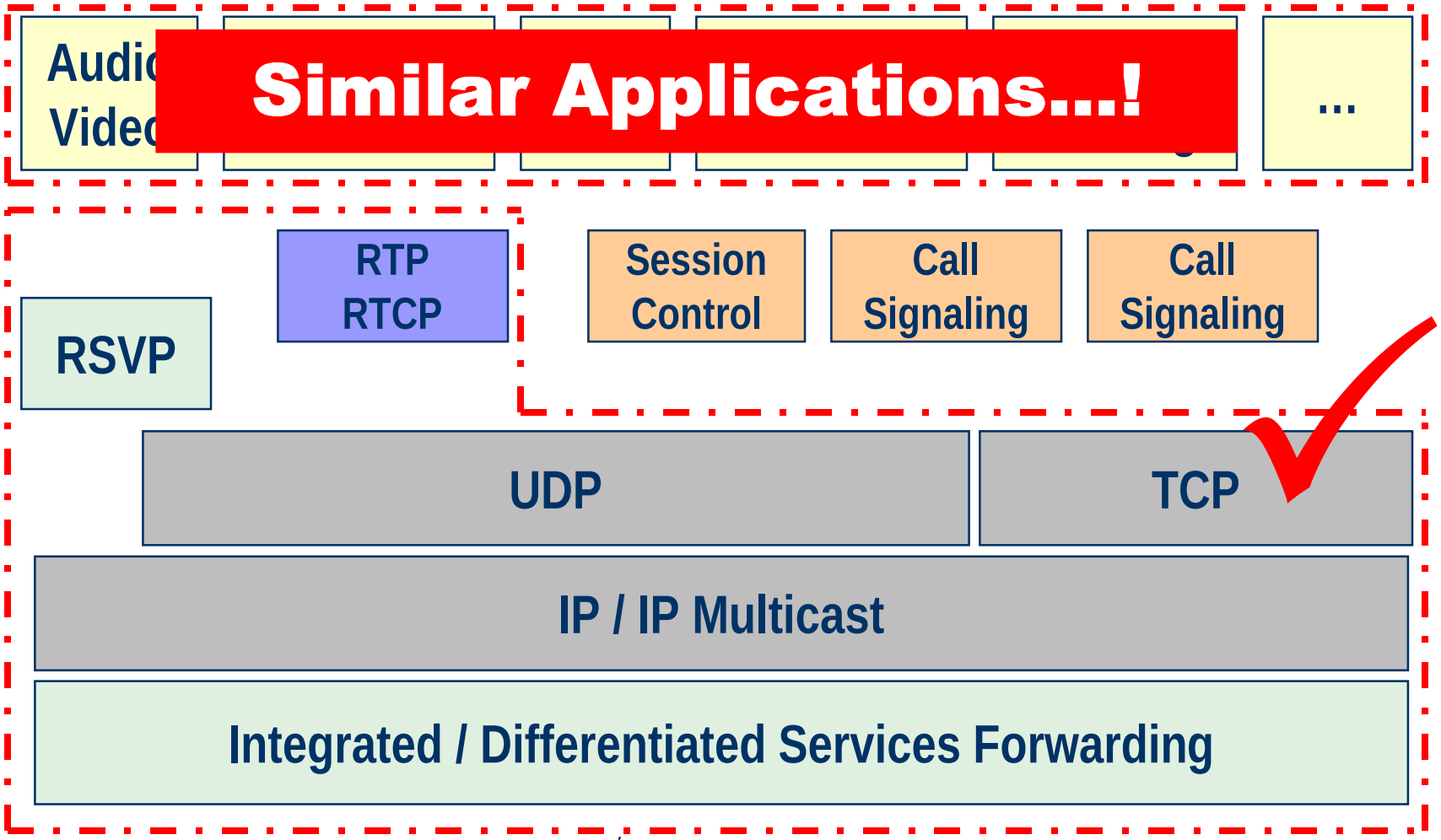


PSTN IN H.323 SIP H.248 MEGACO MGCP Proprietary …

Divergence in points for service creation

Interworking…

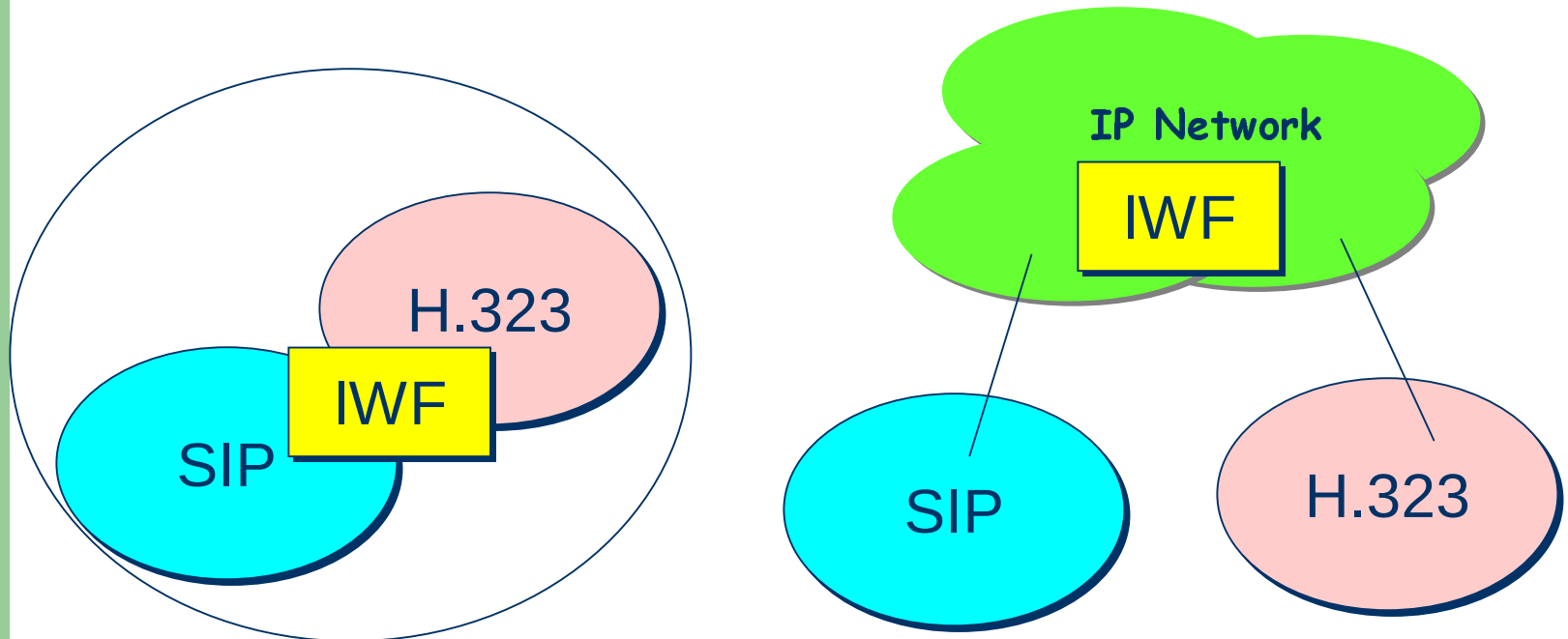
Basic Interoperability



Two Examples

- SIP – H.323 Interworking
  - “culturally compatible protocols”
- SIP – MEGACO Interworking
  - “similar to talking to the PSTN”

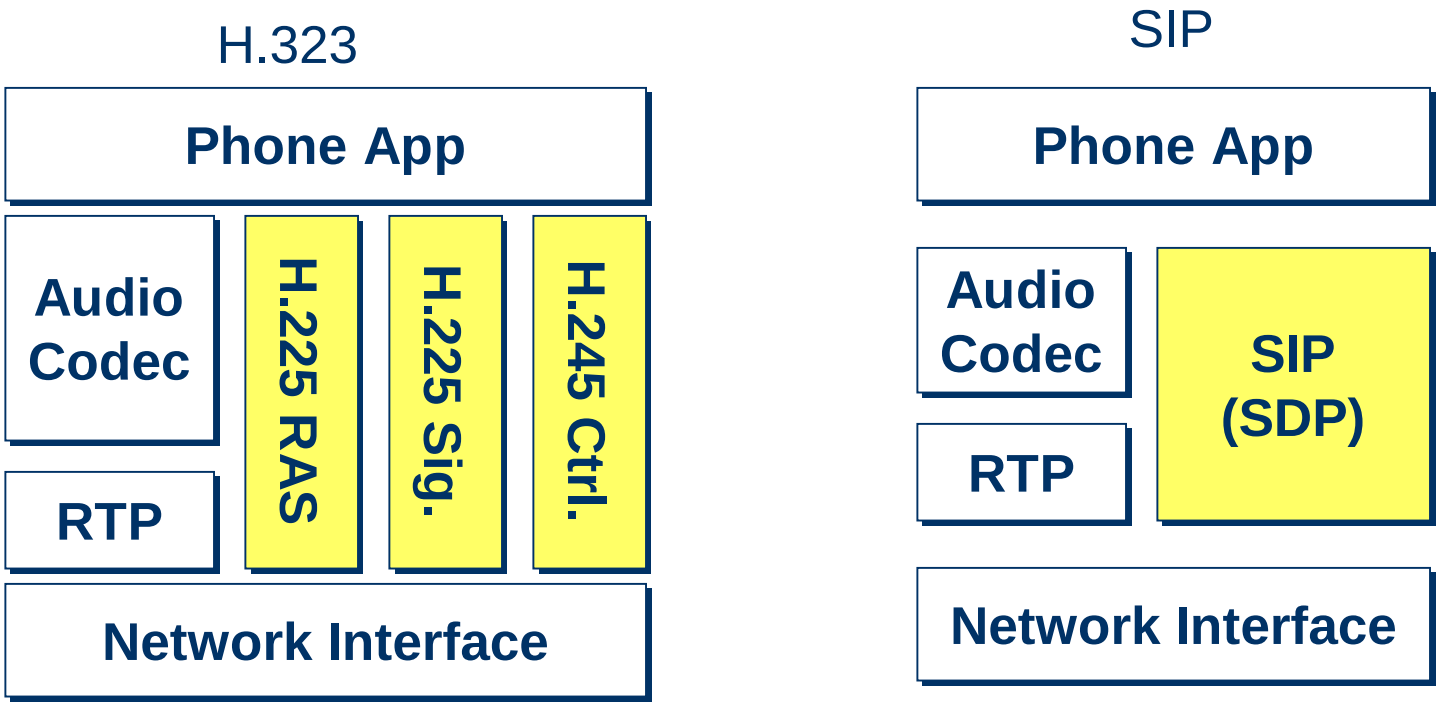
SIP-H.323 Interworking



Same admin domain

Different admin domains

SIP-H.323 Interworking – Mapping Signaling Only



ASN.1 PER encoding

Text based encoding

SIP-H.323 Call Setup Issues

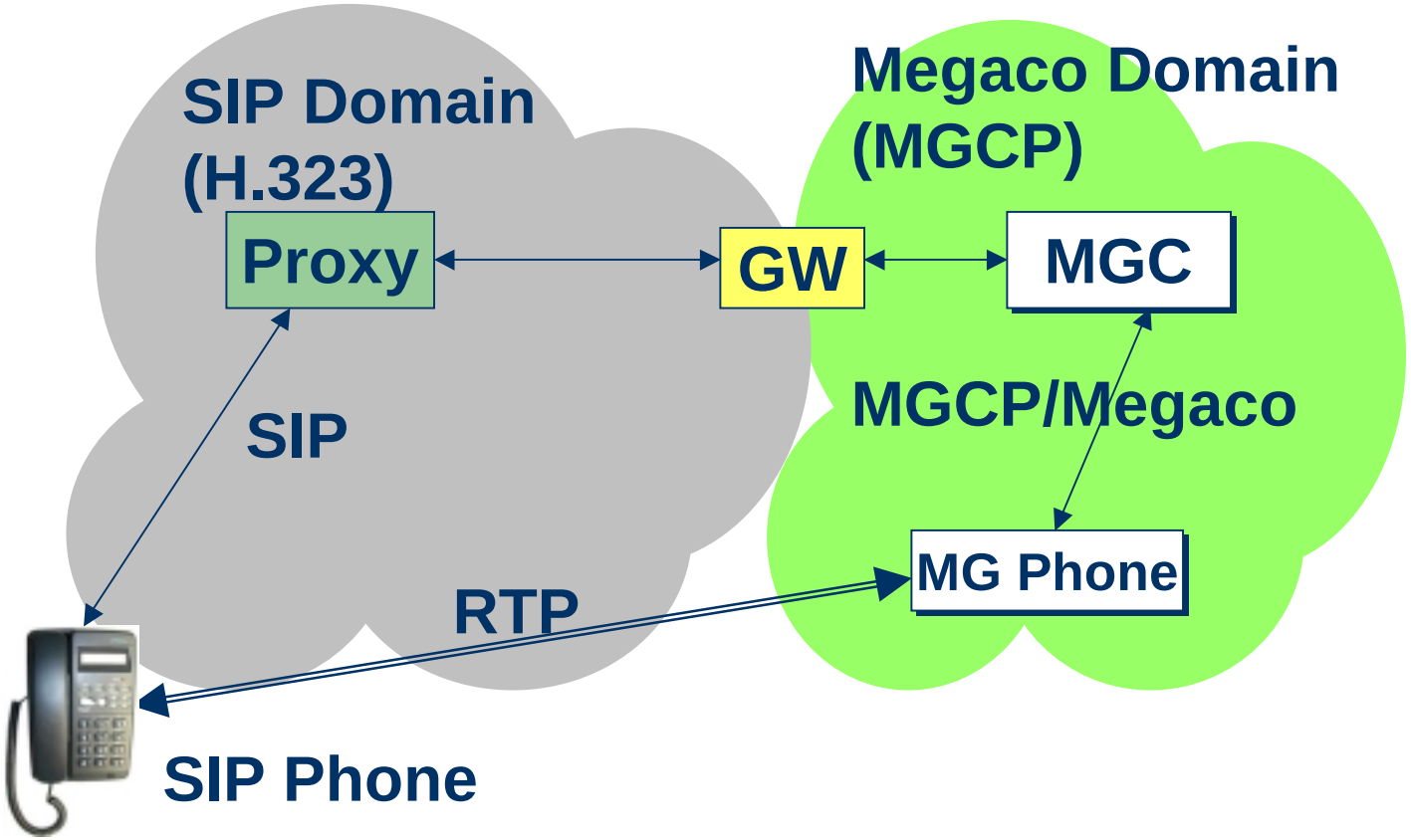
- Registration: how to register users to foreign networks?
  - Registering H.323 users to SIP registrar and vice versa
- Mapping three piece of info for call establishment
  - Address, media type and port addresses
- Mapping signaling steps
- Media description mismatch
  - SIP/SDP (dynamically choose from listed modes)
  - H.323/H.245 (choose from give set of modes)
- Security: H.323 uses H.235 and SIP does Digest
  - SDP extensions to carry / negotiate keys under development
- QoS Signaling?

Current Status: SIP – H.323

- First cut at Interworking Fun n (IWF)
  - Requirement draft: draft-a -h323-interworking-reqs-02.txt
  - Interworking draft: d al-sip-h323-interworking-01.t
- Covers basic c only
  - Complex s ***rther study***
- Needs t th many configurations
- Integrati rks only well within servers

ONLY A FEW SERVICES!

Interworking between SIP and Megaco (MGCP) MG Phones



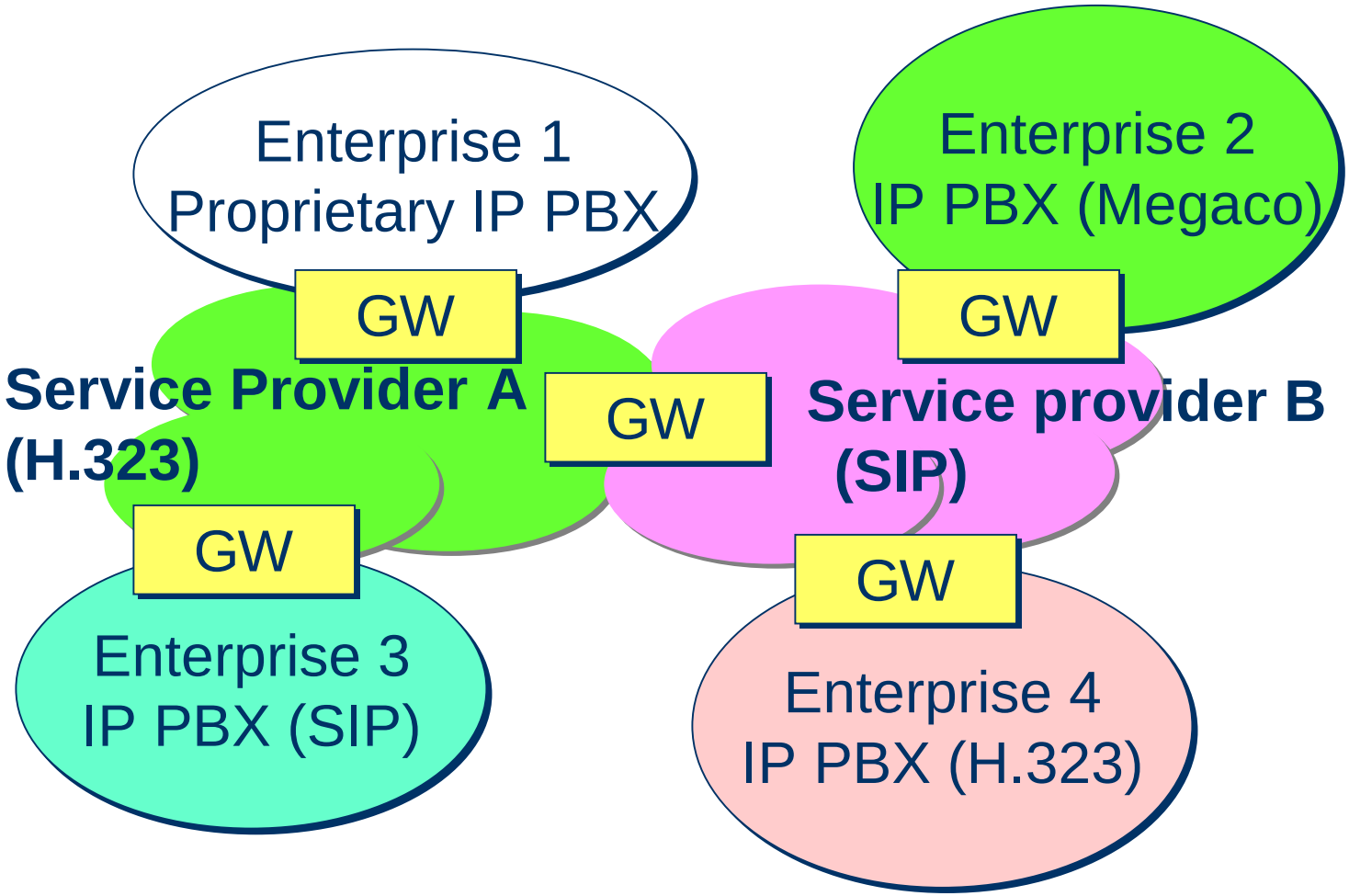
Current Status: SIP - MEGACO

- No Interworking Function Sp (IWF)…?
- Hidden in MGCs and
- Limited to what CO can do at all
- MEGAC o much into services…

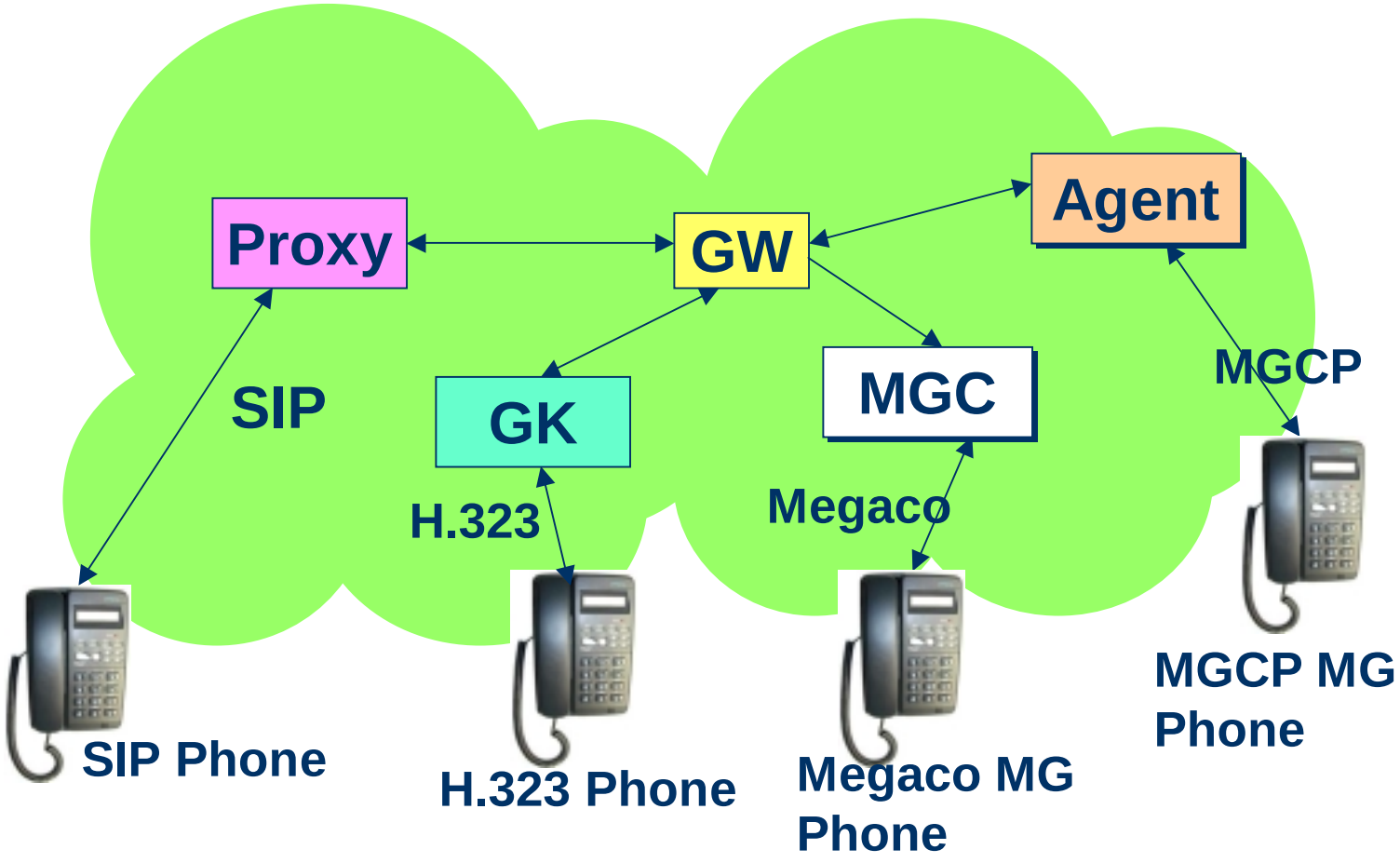
SERVICES ???

What about more sophisticated scenarios…?

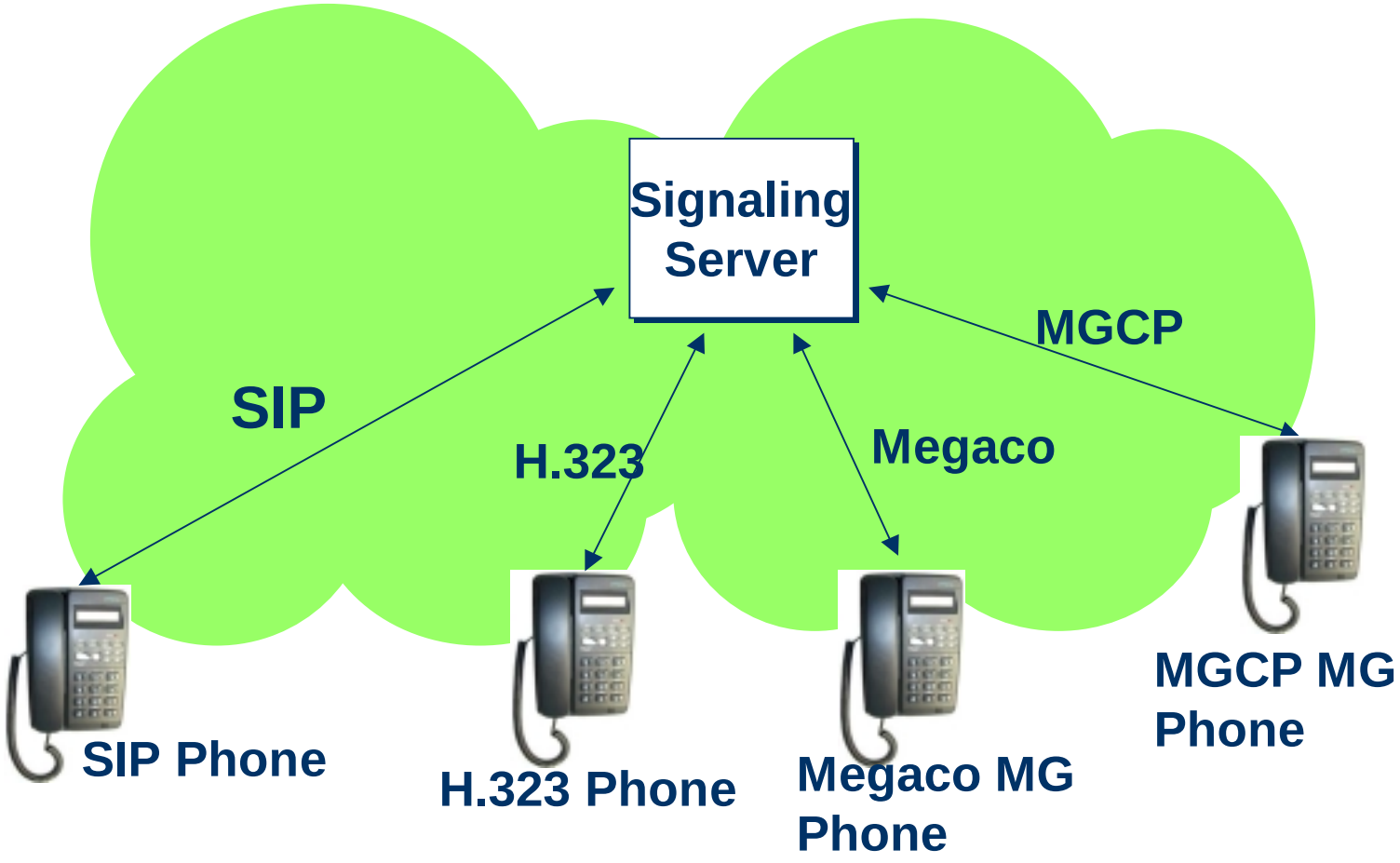
Islands of Protocols?



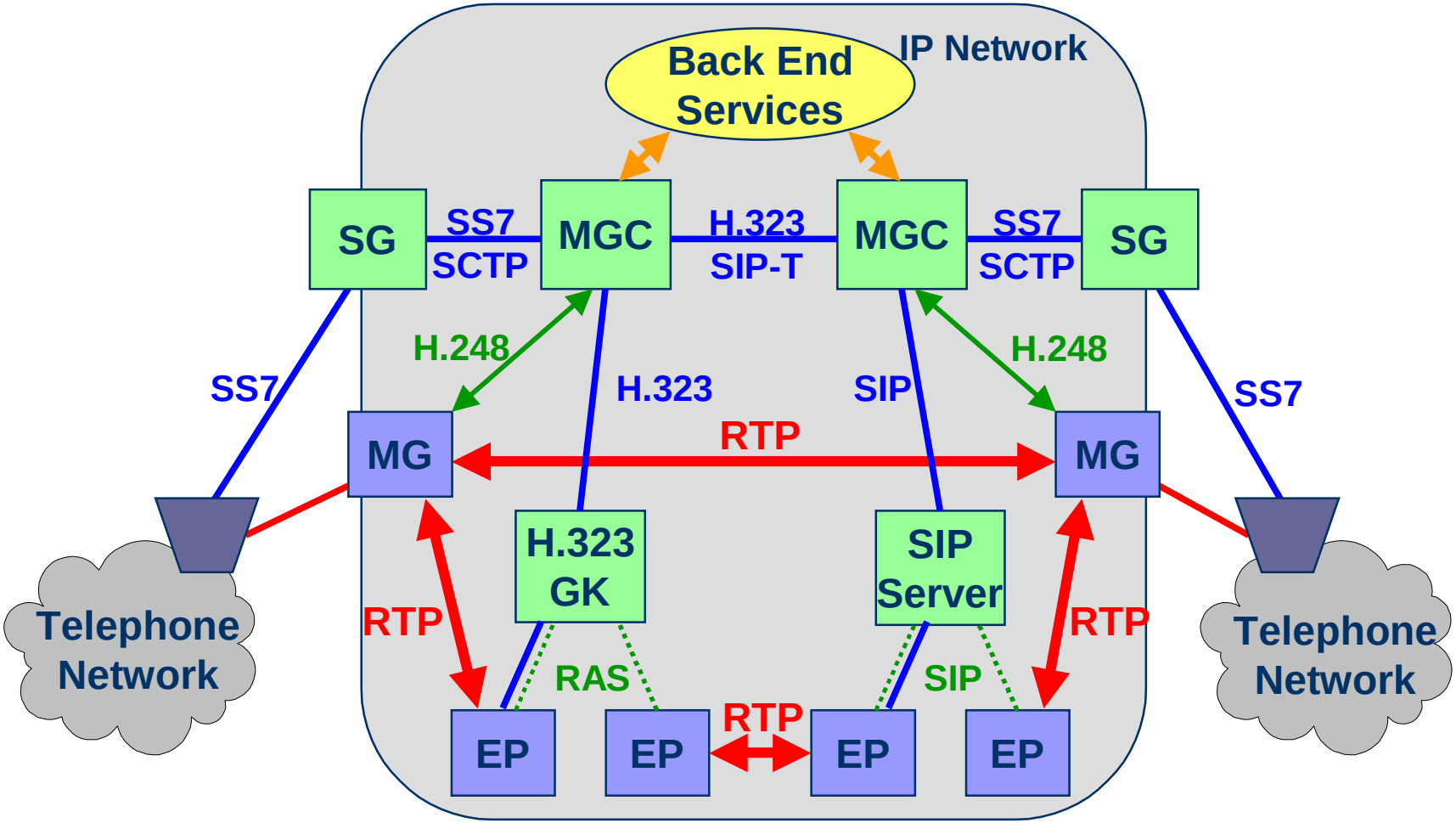
Interworking between IP Phones



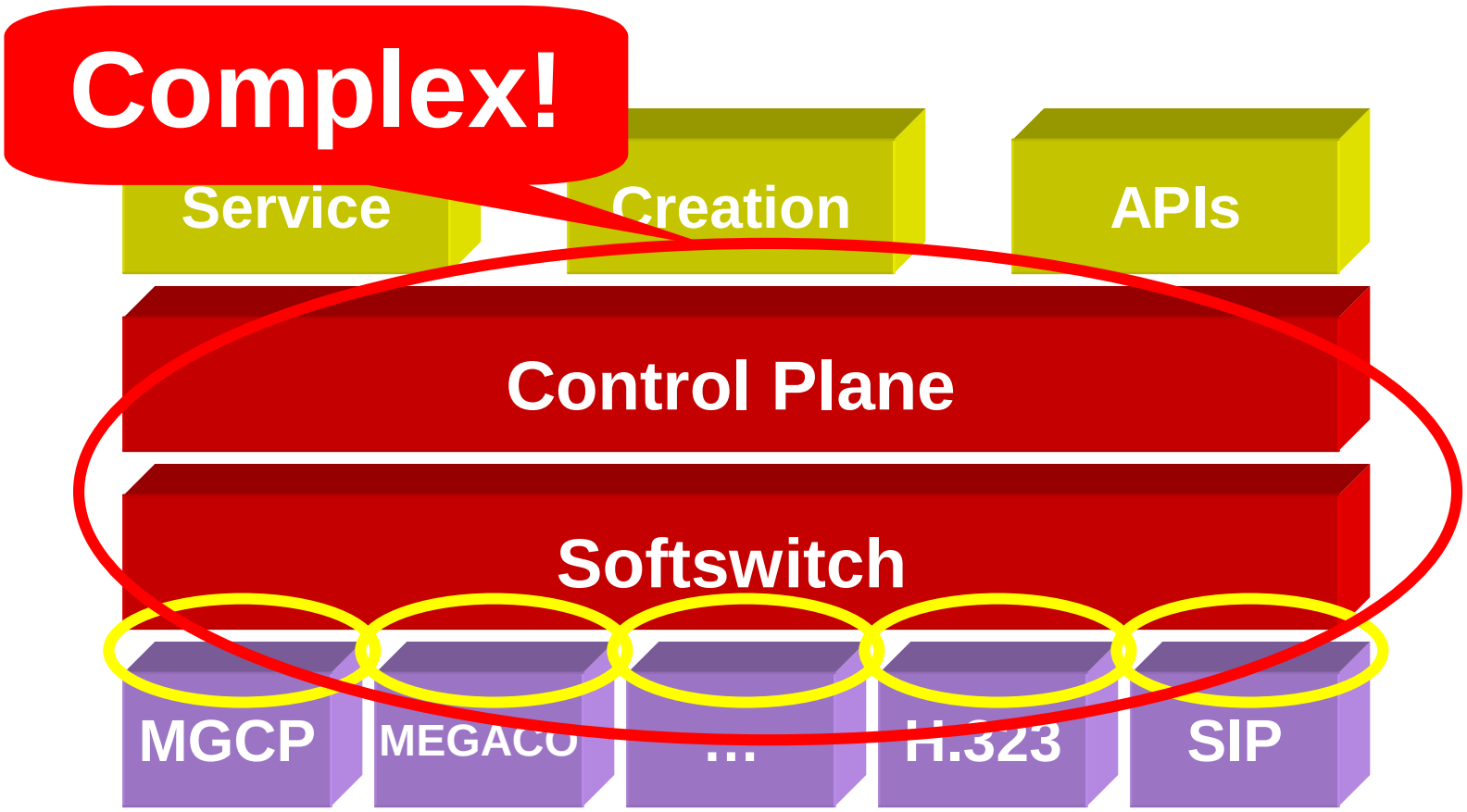
Universal Signaling Server?



The “Vision” for a Converged Network…



Network Integration: IN



Service Creation & Interworking

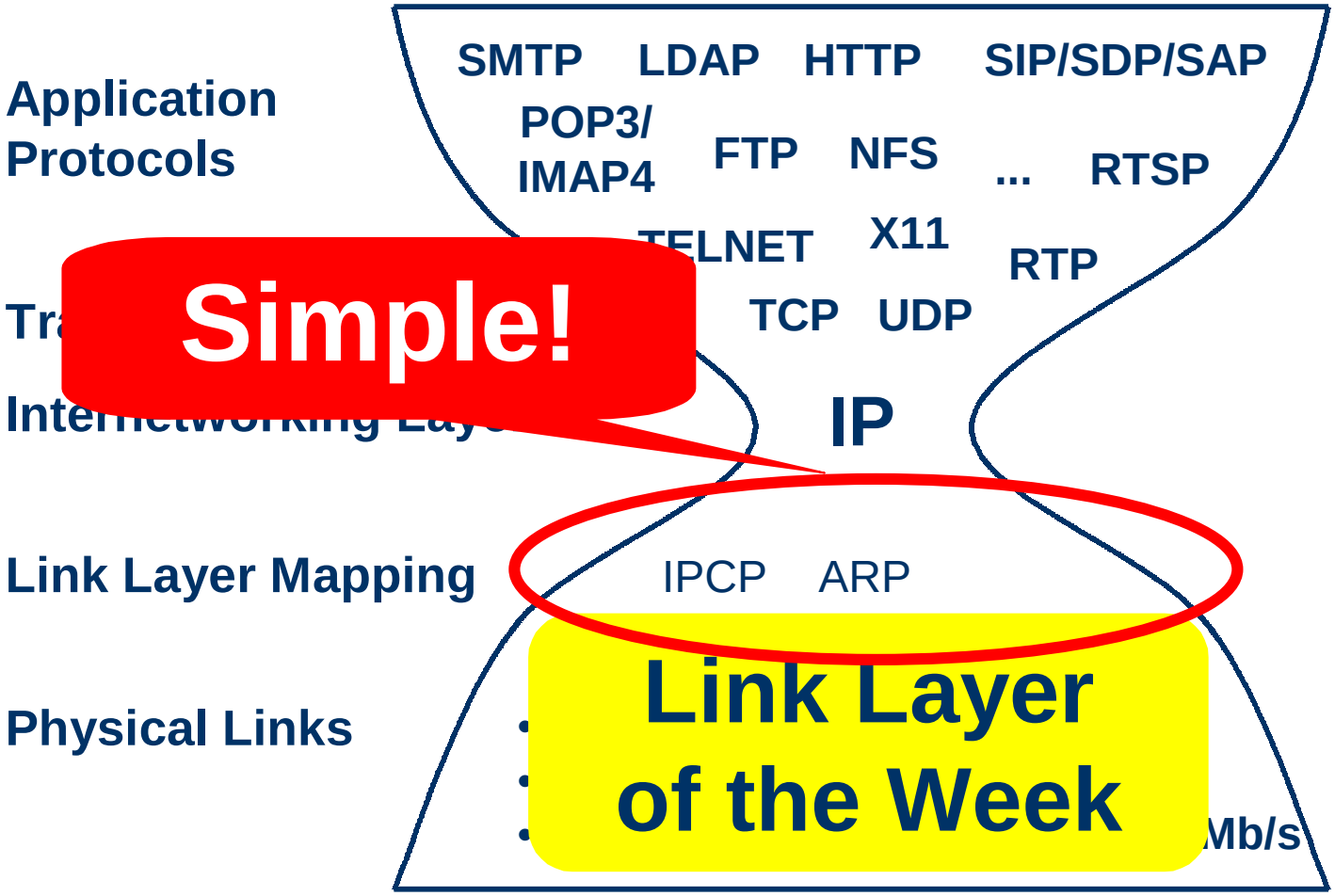
- Protocol building blocks in the network
  - Services to be created on top of those
  - Potential for limiting access to service creation
- “APIs” for service providers
  - JAIN, Parlay, OSA, CAMEL, …
- Back end service protocols
- Numerous standardized services / functions

Network infrastructure may inhibit extensions

And what would be the next step…?

Silence…

Network Integration: IP



Service Creation

- Basis of success of the World Wide Web
  - Many people
  - Many ideas
  - A lot of information
  - Many business models
  - No (or only a few) restrictions
  - No expensive certification, etc.
- Broad basis for creativity, innovation, …

Network is not an hurdle – it's a bridge!

But it doesn't do your job either.

Endpoint-enabled Interworking

- Some thoughts (not the full solution yet…)
- Leave address translation up to servers
  - Numerous approaches conceivable
    - Multiple registrations, shared data bases, integrated servers
  - Redirect, don't proxy
- Dual infrastructure for outbound calling
  - Keep core networks orthogonal
- Use the peer's protocol in your endpoint
  - Place logic into intelligent phone application
  - Works more easily for numerous services
    - Caveat: conferencing servers must be multi-lingual

Multi-Protocol Endpoints

- Enable endpoint-based interworking
- Devices such as cell phones and residential IP telephones may have to support multiple protocols
- Allows to migrate your client with your infrastructure
- ipDialog demonstrated call set up among multiple protocols in a simple SIP+Megaco phone
- ipDialog's VoIPTone™ family of IP phones are cost-effective OEM phones with SIP, H.323, MGCP and Megaco/H.248 support

Conclusion

- Many protocols will stay around for a while
- Network-based gatewaying: a nightmare
- Lot's of complexity for little functionality
- Do it *the Internet way*: end-to-end
- Hoping that this will remain an interim solution…