# Standards for VoIP in the Enterprise

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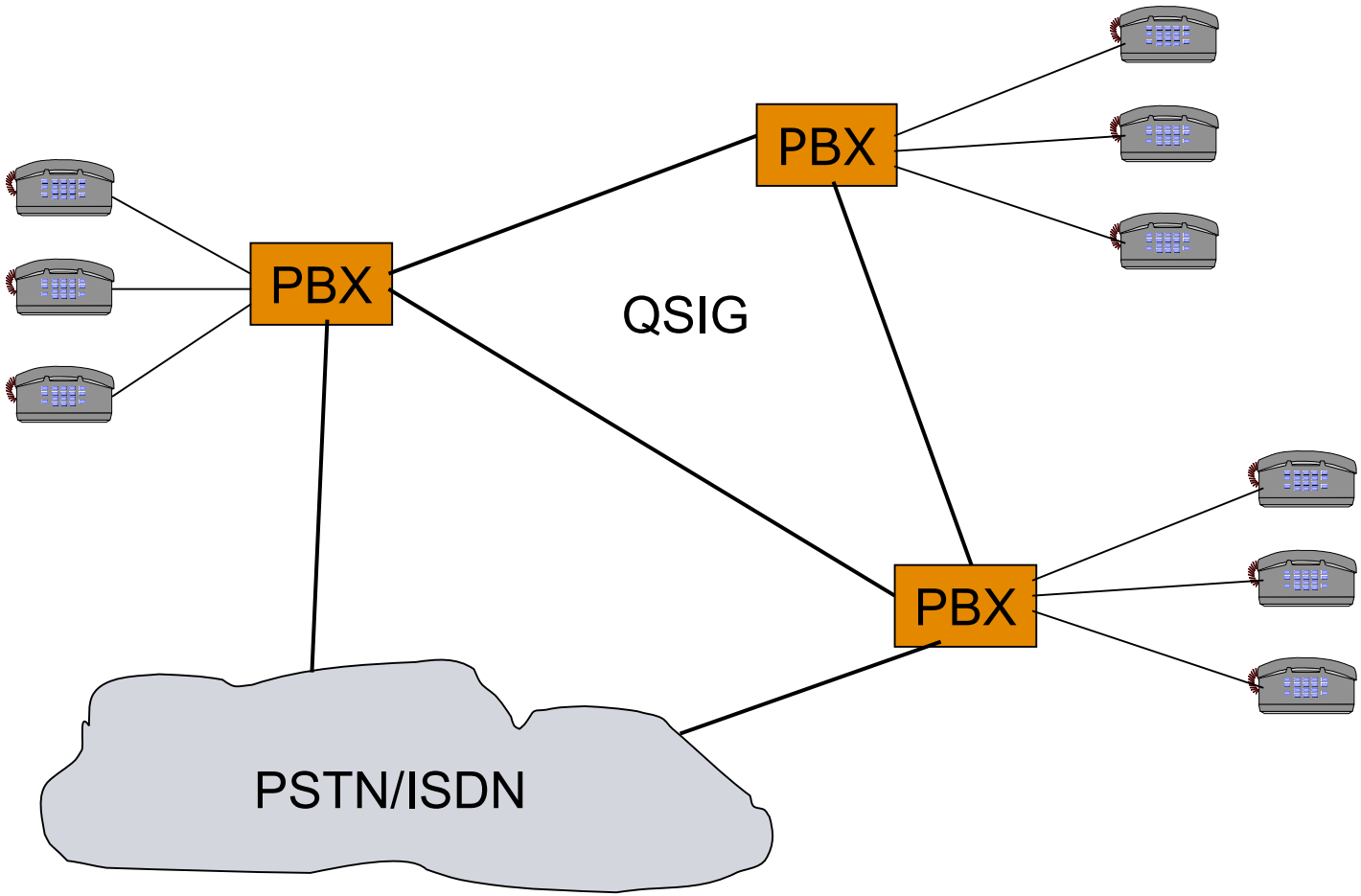
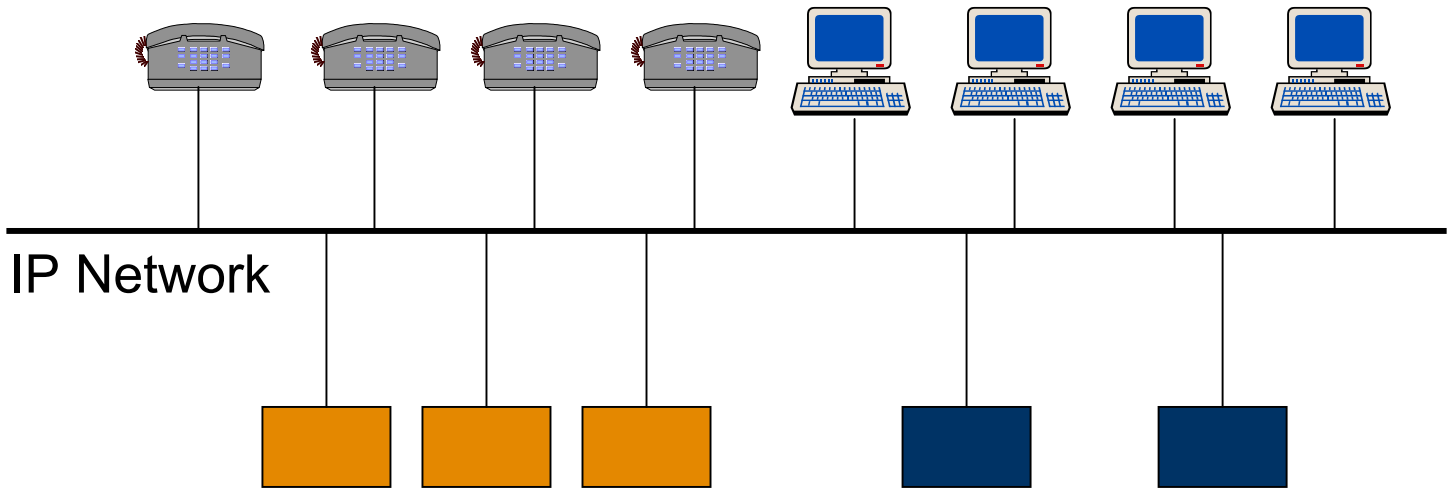
# Traditional Enterprise Networks

## Private Integrated Services Network (PISN)



# VoIP Networks




Gatekeepers, proxies, redirects, location servers, authentication servers, border elements, etc.

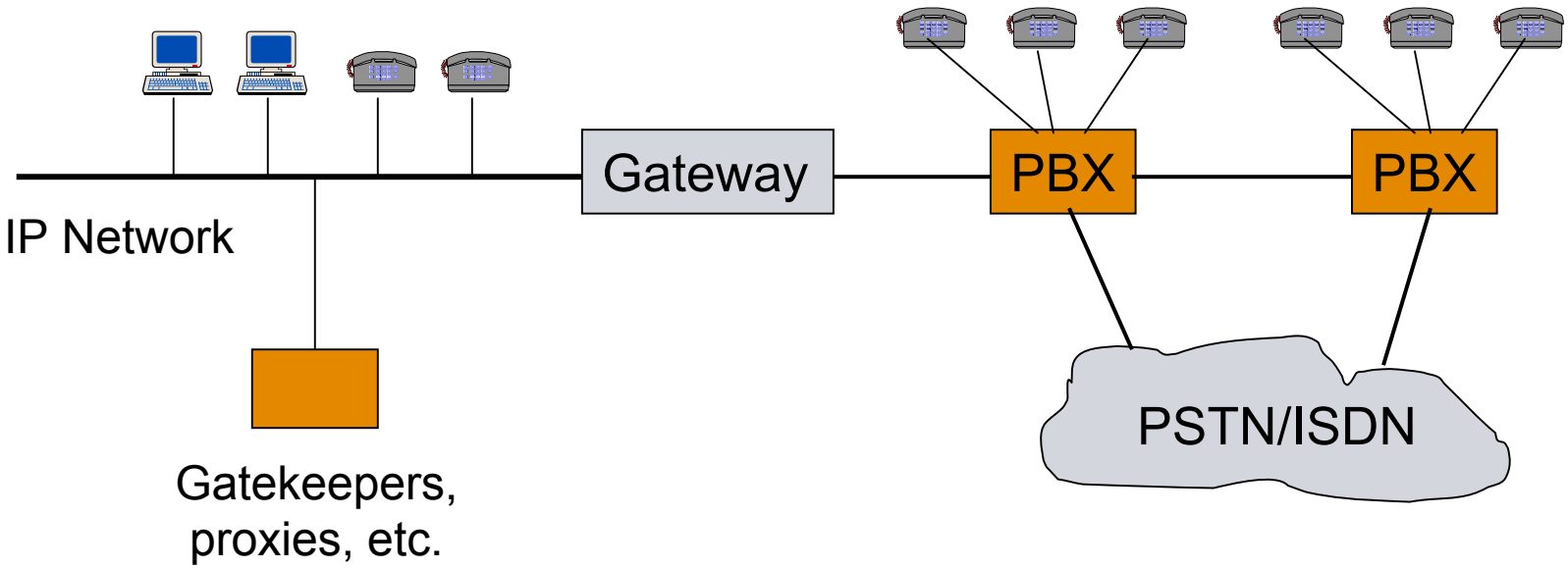
Gateways to other networks

# The Need for Evolution

- *Many enterprises have substantial investment in traditional voice networks*
- *Fork-lift upgrade can be too costly and risky, particularly for larger networks*
- *Desire to evolve to exploit common infrastructure and new applications*
- *Must maintain business-critical functionality*
- *Desirable to maintain other frequently used functions*

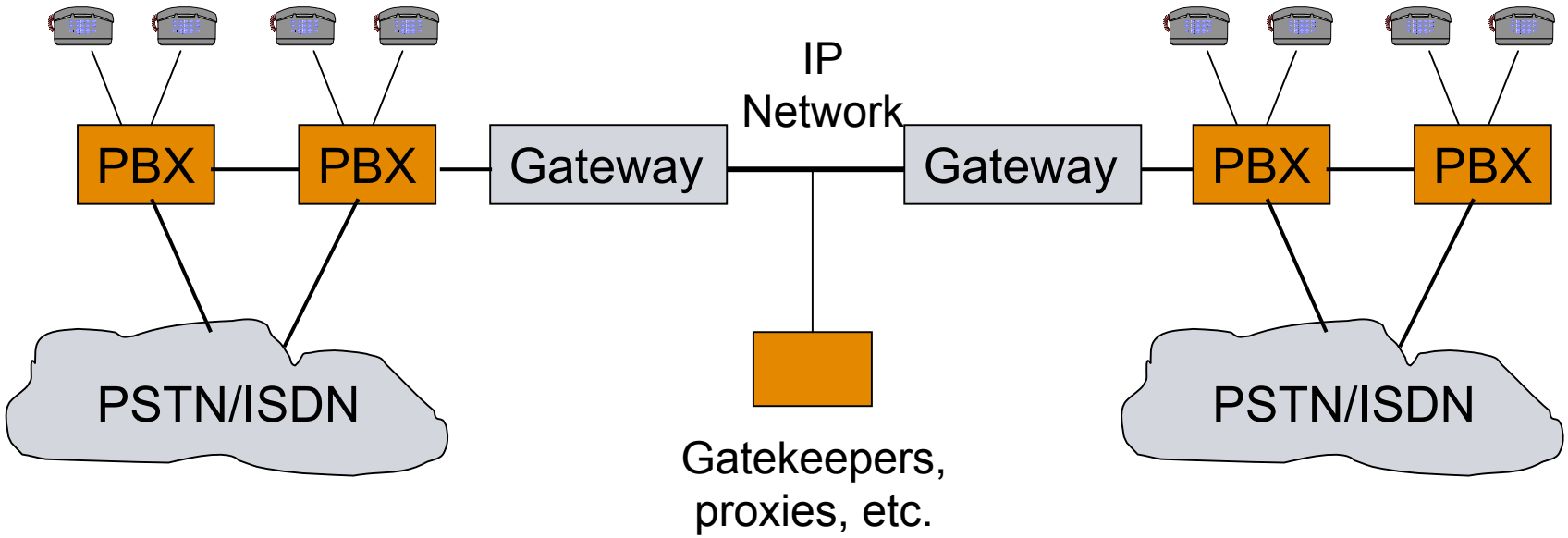
# Interworking

- *New VoIP additions need to interwork with existing PBXs*
- *Need to interwork signalling, numbering, etc.*



# Bridging

- *IP wide area network used to interconnect different parts of PISN*
- *Need to convey PISN signalling, numbering etc. across IP network - tunnelling*



# Ecma Work on VoIP

- *QSIG standards were developed in Ecma and led to the publication of ISO/IEC international standards*
- *Other work on traditional enterprise voice networks includes architecture, numbering and addressing*
- *Attention now focused on VoIP and multimedia, in particular evolution of traditional networks to IP*
- *Standards produced on tunnelling QSIG over IP and on interworking between QSIG and signalling systems used on IP networks*
- *Protocol-agnostic as far as IP network is concerned - both H.323 and SIP addressed*

# Signalling

- *H.323 and SIP are the peer-to-peer protocols for IP networks*
- *MGCP and MEGACO - not considered of direct relevance*
- *Ecma is concerned with applying signalling standards to enterprise environments - protocols themselves are responsibility of ITU-T and IETF*
  - In some respects similar to the IETF SIPPING group, but focusing on the enterprise
- *If shortcoming in protocol detected, will work with ITU-T or IETF to correct*
- *Production of interworking and tunnelling standards*

# Identification

- *PISN identifies users by numbers or addresses*
  - Private numbering plan and/or E.164
  - Separate directory service to get number from name
  - Can supply name for display purposes
  - By default numbers are screened for authenticity, except when crossing network boundaries
  - Presentation restriction capability for privacy
- *H.323 similar, but can also support URLs*
- *SIP uses URLs exclusively*
  - SIP or telephony URL in particular
  - Separate Privacy RFC from IETF
- *Interworking raises issues*

# Features (QSIG/ H.323)

- *QSIG has many features - most PBX features can be networked where applicable*
  - Many of less importance in IP network - achievable by alternative means
- *H.323 has some features - H.450.x*
  - Generally the most important ones, e.g., transfer, diversion, call completion
  - Good compatibility with QSIG - easy interworking

# Features (SIP)

- *SIP has minimal features, BUT:*
  - Provides toolkit (methods, headers) from which features can be assembled
  - Call transfer, history information (for call diversion), presence, instant messaging under study
  - Message Waiting Indication about to be published

# Mobility

- *QSIG has support for terminal mobility (cordless) and for user mobility*
- *H.323 and SIP have an intrinsic mobility capability within a "zone" (gatekeeper or proxy)*
- *Inter-zone mobility being studied*
  - ITU-T SG16 has recently approved H.501, H.510 and H.530 in support of mobility
- *Ecma to study mobility in enterprise environment, with emphasis on services and applications rather than underlying technology*

# Security and QoS

- *Security and QoS big issues for IP network but not for traditional networks*
- *Security handled separately by ITU-T for H.323 (using H.235) and by IETF for SIP (using general purpose security mechanisms)*
- *QoS largely independent of signalling protocol*
- *Security and QoS have little impact on interworking*
- *Security and QoS both important, but considerations not necessarily different in the enterprise*

# Ecma work on QSIG/H.323

**Interworking:**

- *Basic call interworking (ECMA-332)*
- *Interworking of the generic functional protocol for support of supplementary services (ECMA-307)*
- *Interworking of call transfer (ECMA-308)*
- *Interworking of call diversion (ECMA-309)*
- *Interworking of call completion (ECMA-336)*

**Tunnelling (based on H.323 annex M.1):**

- *ECMA-333*

**THIS IS AVAILABLE TODAY, free of charge from http://www.ecma-international.org**

# Ecma work on QSIG/SIP

- *Basic call interworking - ECMA-339 corresponding Internet draft undergoing approval as Best Current Practice RFC*
- *Tunnelling - Final draft Ecma Standard*
- *Identification - ECMA TR/86*
- *Call transfer - Draft available*
- *Call diversion - Draft available*
- *Mobility - Draft TR available*

**THIS IS HARDER –**
**IT'S STILL ONGOING**

# Future focus in Ecma

- *Services and applications in the enterprise*
  - What do customers want?
  - What is needed to support this?
  - What further standardization is needed to achieve this?
- *Service platforms*
  - Service control architectures
  - Service provisioning across multiple networks
  - User customization
  - User presence, availability and messaging
  - Impact of user mobility
- *Interoperability with carrier networks and service providers*
- *Other aspects: security / QoS / reliability / performance as applied to the enterprise*

# Conclusions

- *Evolution of the voice network is important to many enterprises*
- *Traditional and IP networks will continue to co-exist in the enterprise*
- *Exploitation of new services and applications in IP network*
- *But needs to be complemented by extending existing services to IP and mixed environments*
- *Ecma is working to ensure appropriate standards are in place*

**THANK YOU**