



IEEE CQR 2006

***“You can’t just say
VoIP is insecure!”***

Keith Iremonger

VoIP Flavours

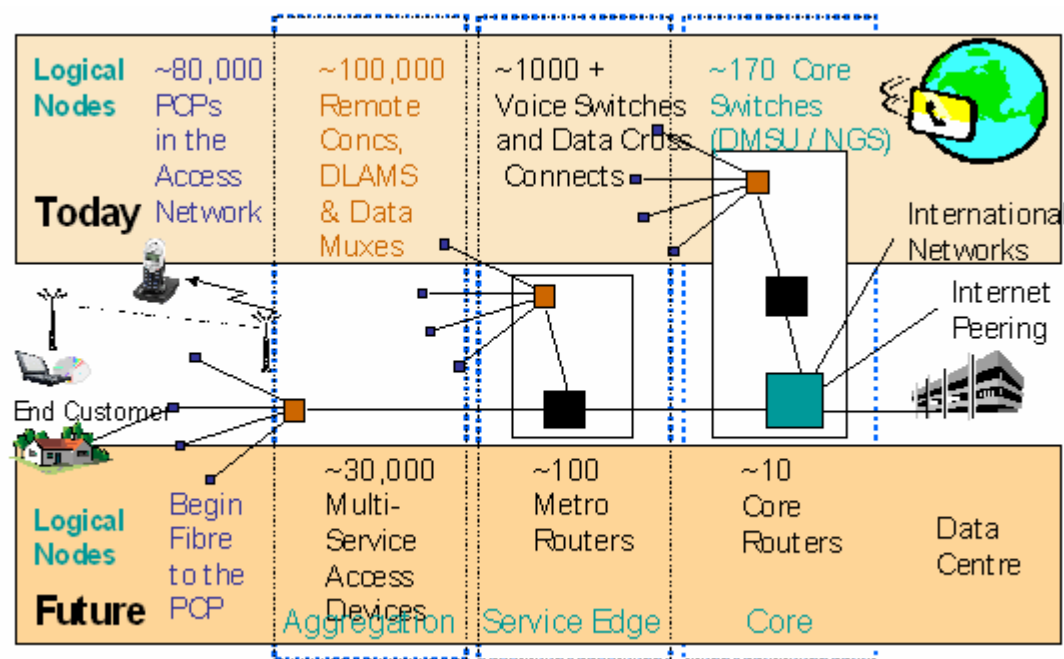
1. Internet Telephony
2. Enterprise VoIP
3. PSTN replacement (NGN)



1.



2.

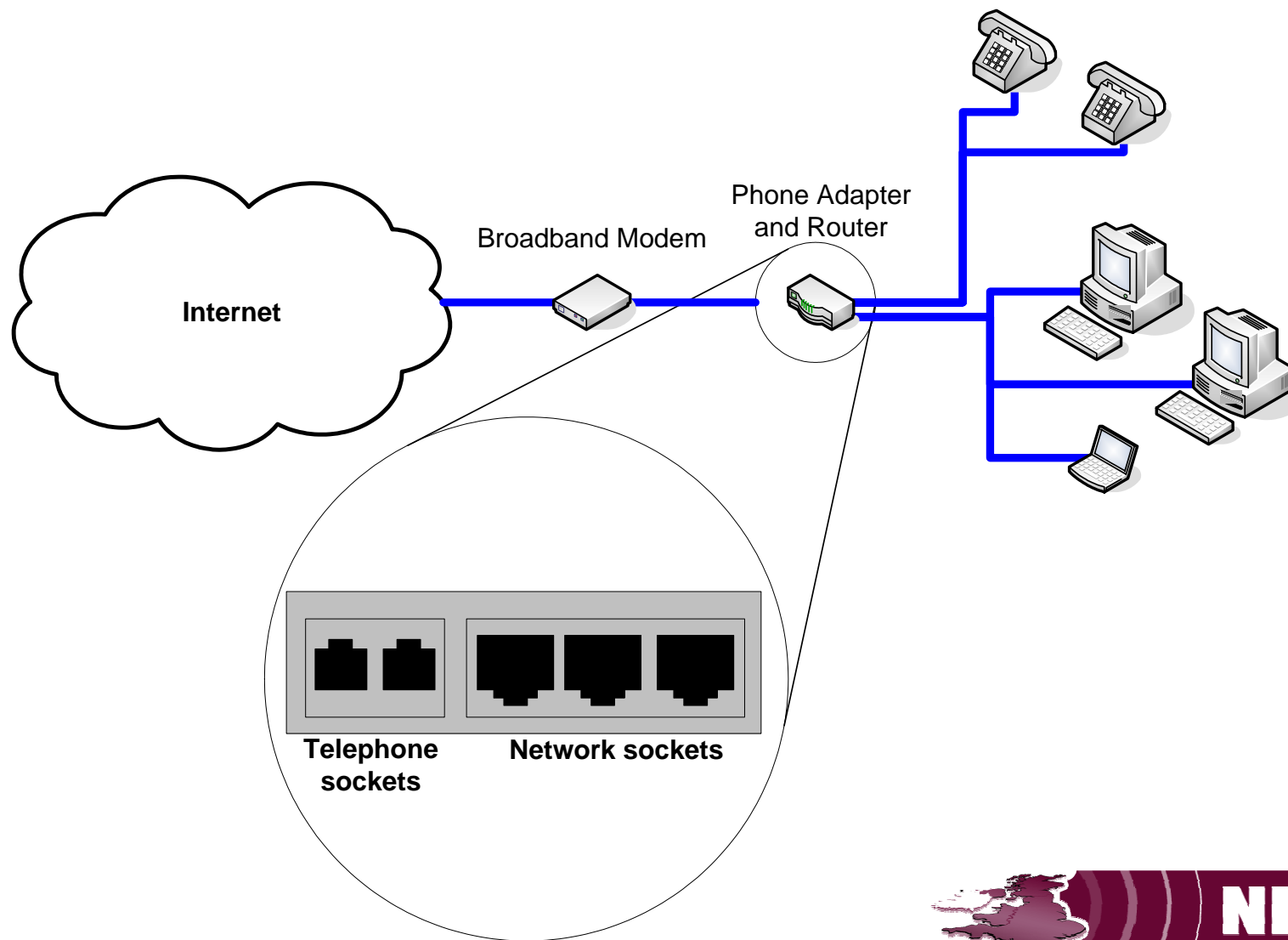


3.



Internet Telephony Security Considerations

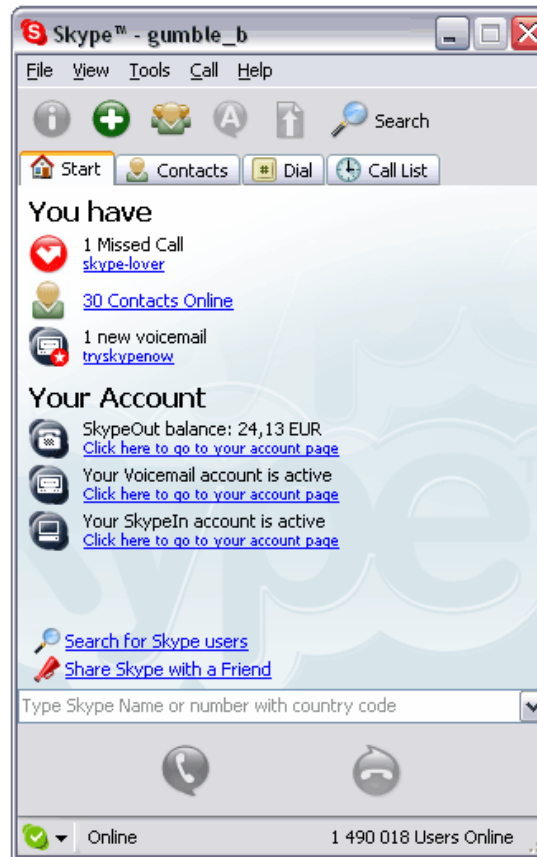
Analogue Telephone Adaptor (ATA)



Software VoIP Clients

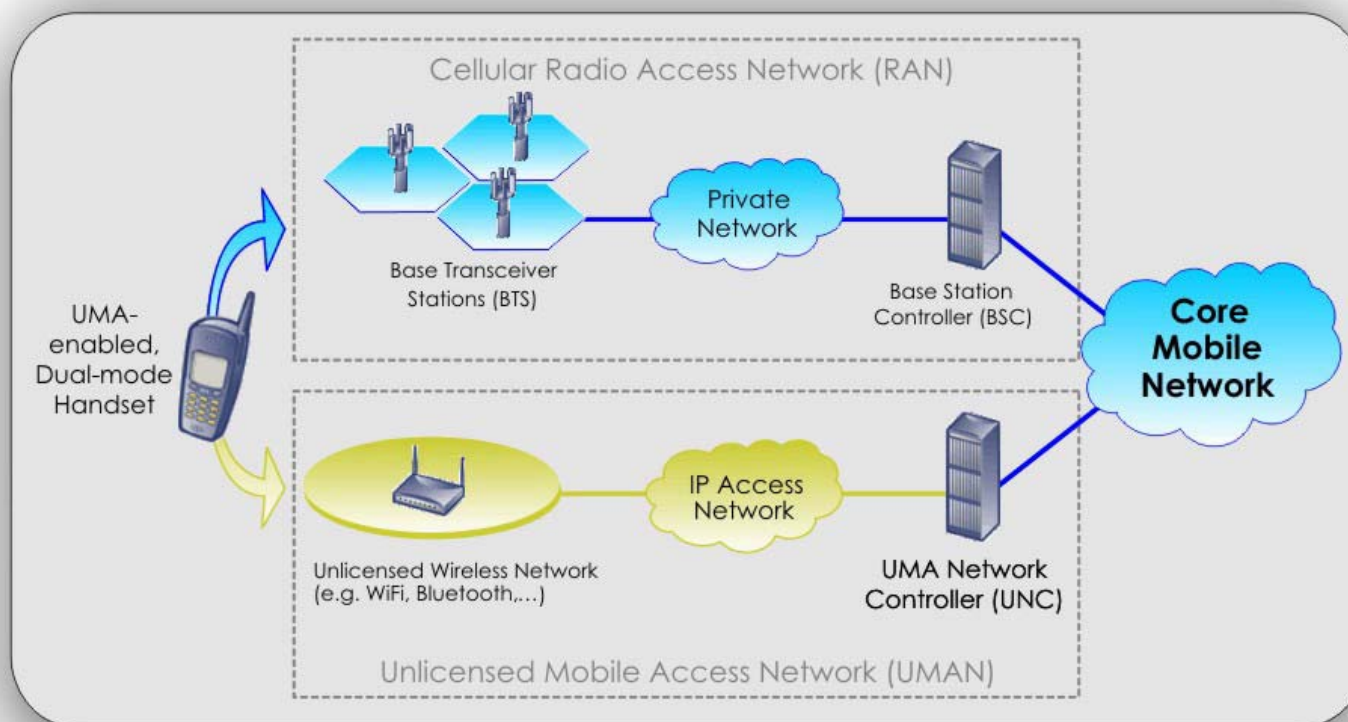


Softphone



Skype

UMA Technology



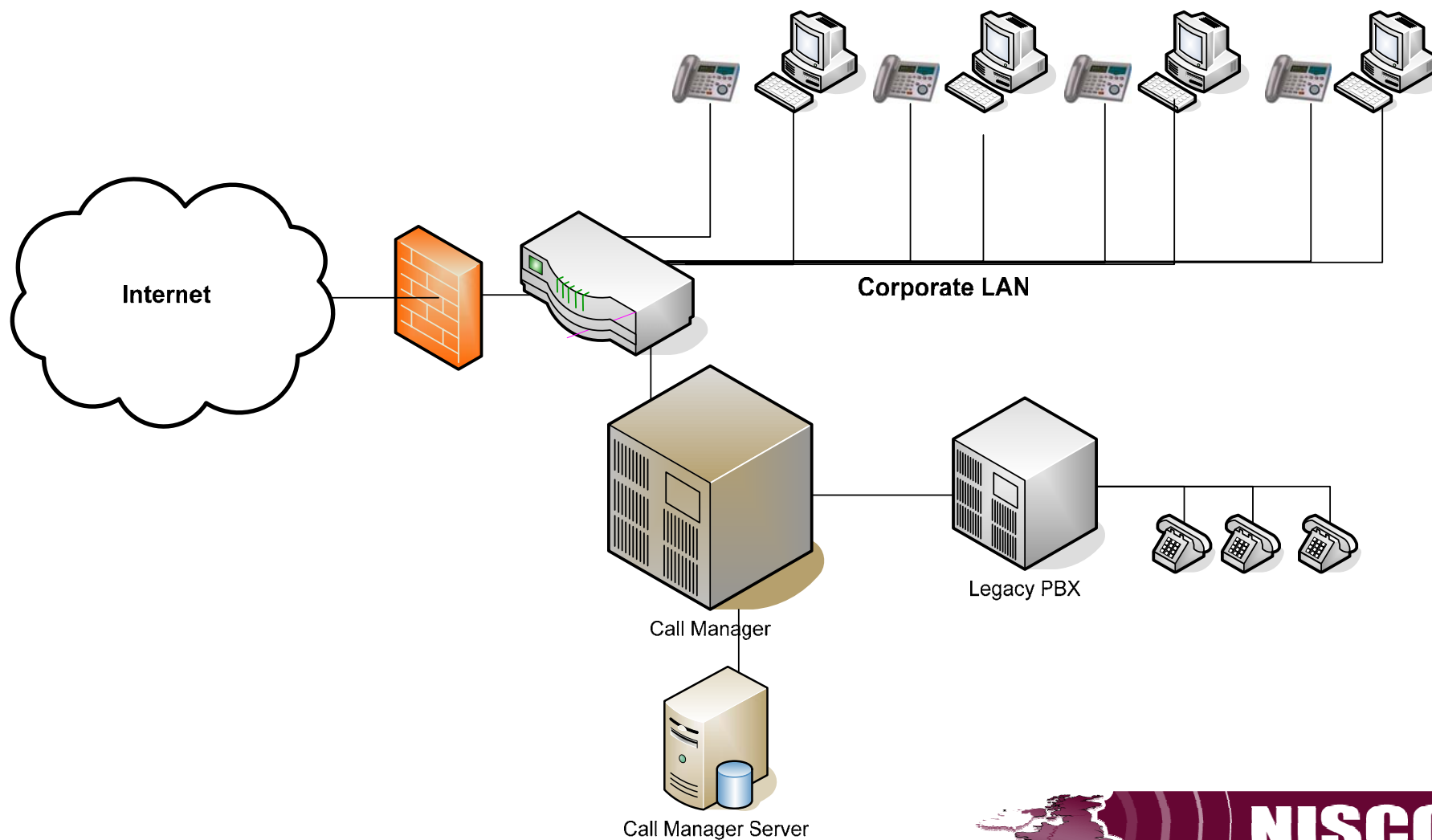
Internet Telephony Security Considerations

- Resilience of ISP connection
- Power – no longer got 48V
- Standard Internet Denial of Service
- Media stream unprotected
- Un-trusted software
- Hacking of home gateway
- Lack of Integrity in protocol
- 999 emergency calling

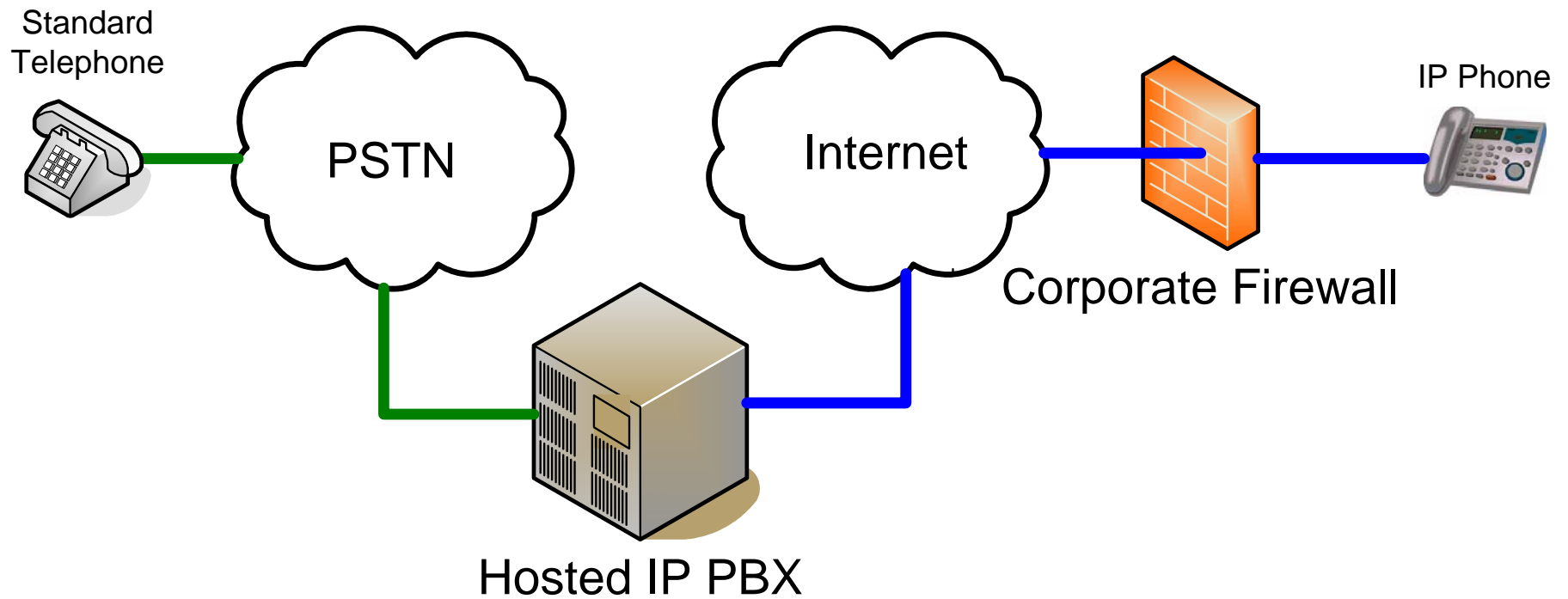


Enterprise Telephony Security Considerations

Enterprise VoIP

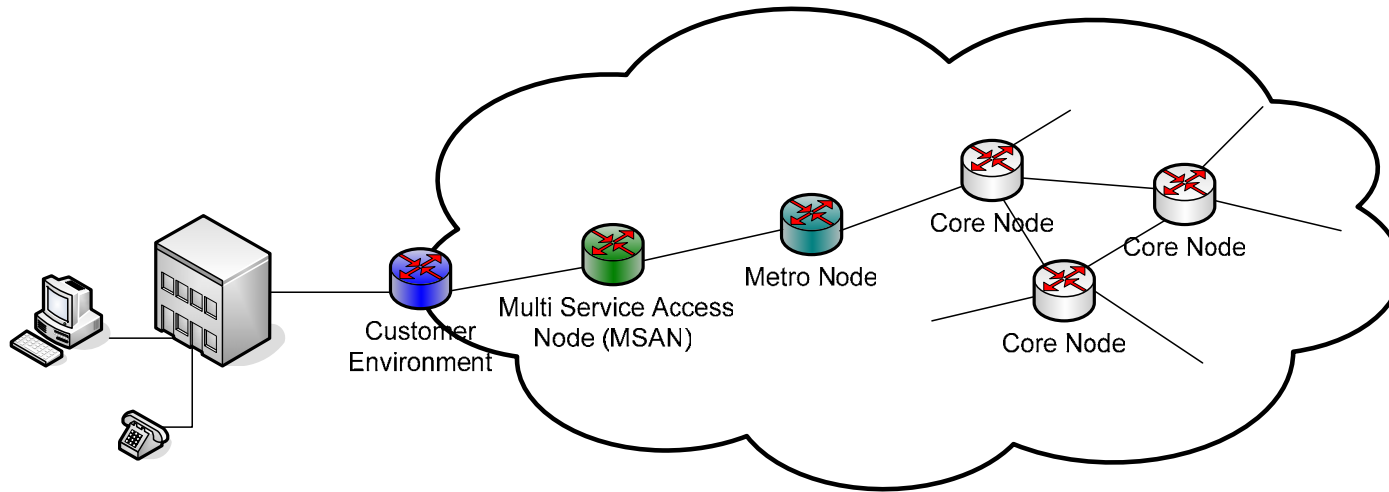


Hosted IP PBX



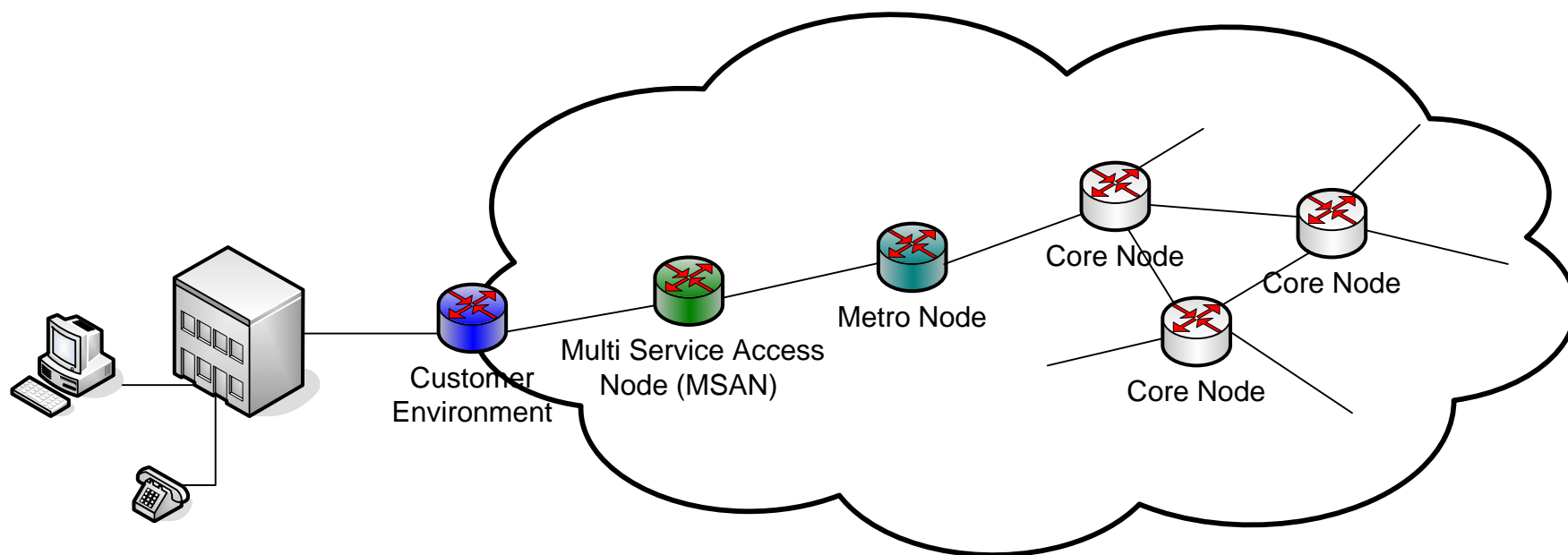
Enterprise Telephony Security Considerations

- Controlled operation across corporate firewall
- Scalability, dependence on other services
- Power protection
- Traffic separation
- Network lockdown & physical security
- QoS
- Encryption
 - key management
 - NAT traversal
 - Handset capability
 - TLS, SRTP



PSTN Replacement Security Issues

PSTN replacement VoIP



PSTN Replacement Security Considerations

- Lawful Intercept
- Un-trusted vendors
- Interoperability of equipment
- Large-scale Authentication
- Large-scale Encryption
 - Hop-to-hop or End-to-end
- Interconnect
- Network topology hiding
- Rate limiting, control, filtering

Conclusions

- SIP vulnerabilities

- Registration hacking
- Proxy impersonation
- Message tampering
- Session tear down
- Resource exhaustion

- Power

- Signalling and/or
Media Encryption

COMMON SECURITY
CONCERNS