

**VoIP Security**  
**Stephen Kingham**  
**ACEVENTS VoIP Summit 2007**  
**Sydney Convention Centre**



**INTEGROUP**  
managing communication networks

**Security for VoIP, IP Telephones and Video Conferencing**

Lots of hype about a looming disaster....  
 Lots of statistics about the possible impact....

Regardless of your predisposition some security is definitely warranted.

Presentation Objective:

Based on lessons learned from 9+ years of VoIP for CSIRO, the Australian Universities and Centrelink.

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**VoIP, VIDEO Conferencing and IP Telephones**

- VoIP backbone (V is for Voice and Video)
- PABX IP Telephones
- Room based Video conferencing
- Roaming IP Telephones
- Desktop Video Conferencing
- Not included is Presence and Instant Messaging



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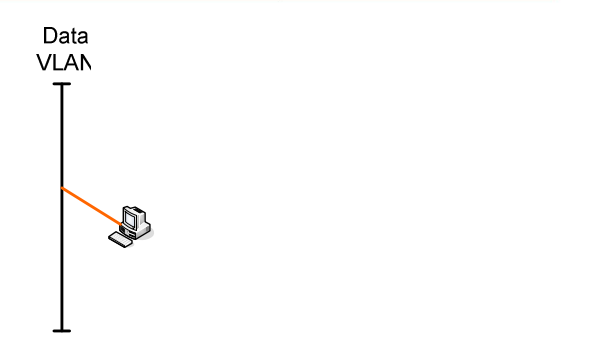
**Types of risks**

Types of Risks:

- Faults, Maturity of the Support
- Denial of Service (DoS)
- Man In The Middle (MITM)
- SPAM using IP Telephones (SPIT)
- Toll Fraud, and
- Interception.

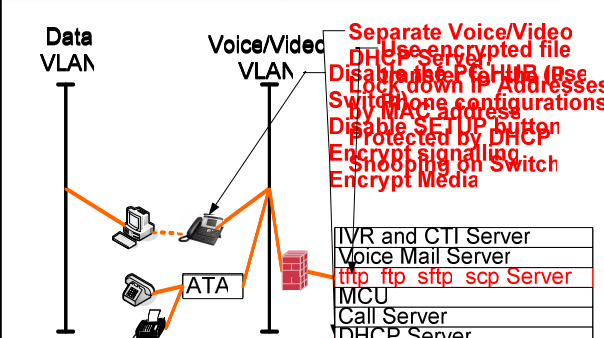
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**Starting with the Data Network**



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**Hardening the Servers and the protocols**

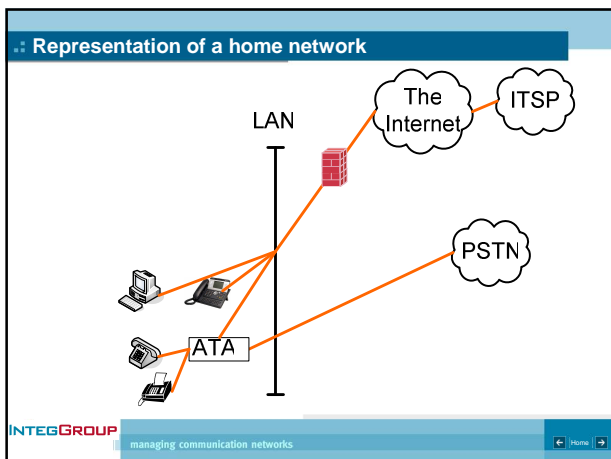
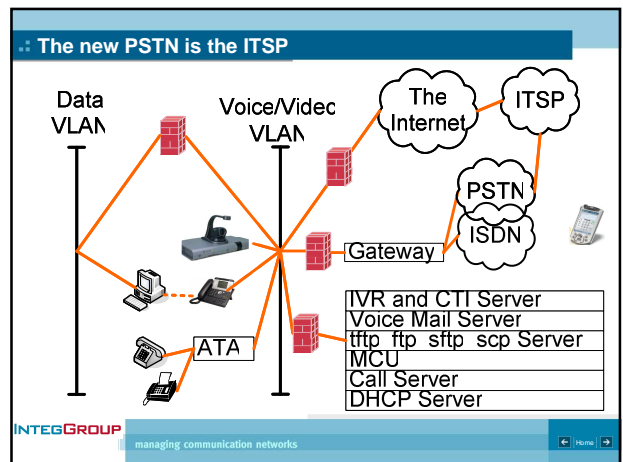
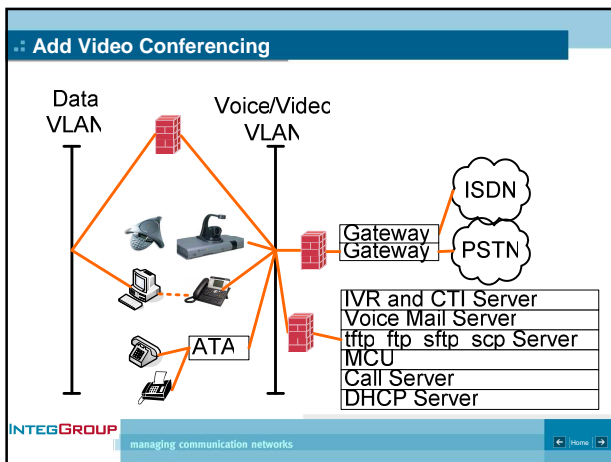
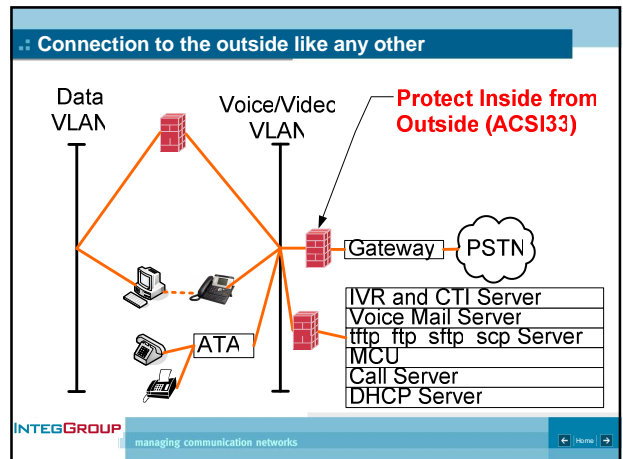
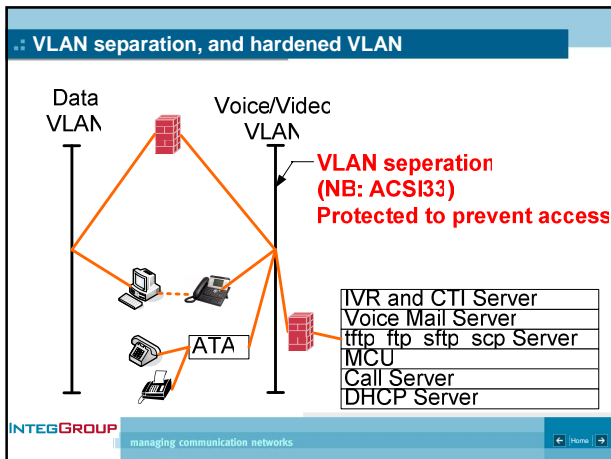


Separate Voice/Video VLAN

These are encrypted files  
 Disable Interfering (Use  
 Lock down IP Addresses  
 Switch configurations  
 Disable SETUP button  
 Protected by DHCP  
 Encrypt signalling  
 Snooping on Switch  
 Encrypt Media

IVR and CTI Server
Voice Mail Server
http ftp sftp scp Server
MCU
Call Server
DHCP Server

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### .. Starting at the handset/Video conference unit

**This is #?@ boring!**

**MUTE**

**Trick Question:**  
Does "MUTE" turn off:  
1. the speakers, or  
2. the microphone?

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Starting at the handset/Video conference unit

- Make sure Mute means “Mute the microphone”!
- Disable auto answer, or at least have auto answer but with the microphone turned off.

Secure the handsets

- Secure DHCP: configure DHCP snooping ✓ to stop DHCP masquerading.
- Use https, scp or sftp and avoid ftp and tftp for the phones to get their configuration.
- Disable the “setup” button on the handsets.
- Use a switch on the phone, not a HUB or a “hutch”.



Secure the network used by VoIP

- Enable “dynamic ARP inspection” ✓ to stop ARP poisoning.
- Enable “IP Source Guard” ✓ to stop IP Addresses masquerading.
- Enable “Port Security” ✓ to stop multiple MAC addresses.
- Use 802.1x ✓ to force everything to authenticate to the network.

SPIT (a social habit)

SPAM messages using VoIP!

Is a reflection of society rather than technology.

Some technology solutions coming: Secure DNS, and SIPS, rfc4568 (adds crypto attribute to SDP to enable identity)

Issues of using a Computer with or without a camera

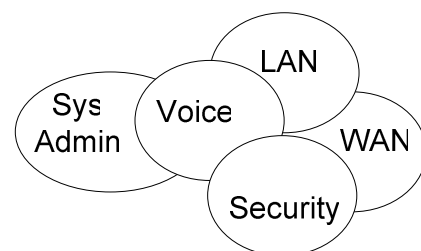
Need to protect the user environment: viruses, malware, spyware....

Some users are uncomfortable with the Video Phone, some dislike the “nose cam”.



Maturity level of the Organisation to support VoIP

IP Telephones (replace the PABX)



.. Maturity level of the Organisation to support VoIP

### Room based Video Conferencing over WAN

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.. Maturity level of the Organisation to support VoIP

### Desktop phones and/or Video

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.. Secure the LAN switches and Routers

Enforce access controls onto management interfaces of Switches and Routers.

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.. Protect the VoIP Infrastructure

Use Access Lists and/or Firewalls to protect:

- Call Servers (soft PABX)
- Gateways (to the PSTN and ISDN)
- Multipoint Conference Units (MCUs)
- Voice Mail Servers
- Interactive Voice Response Servers
- Gatekeepers and SIP Proxies.

•Use a port scanner and scan your own servers and lock down what is open.

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.. IP Telephones : Emergency Services

Make sure calls to Emergency Services (000) (taxi and pizza) go to the VoIP Gateway that is at the same site as the IP Telephone.

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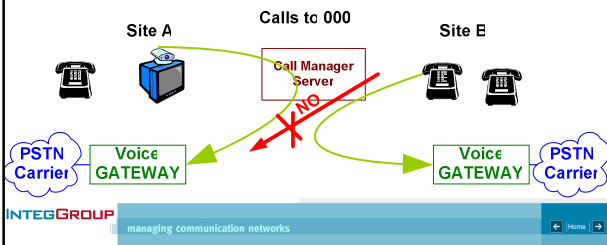
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### Conclusion

Security is a matter of risk, and for Gov't departments is also about complying with "ASCI-33"

Regardless of the probability the impact of the risks are considerable.

There are plenty of experience where the risks have a technical solution.

