VoIP Management

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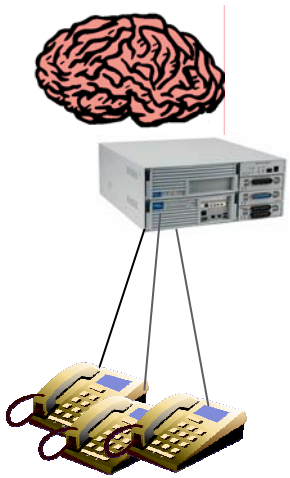
Evolution of Telephony

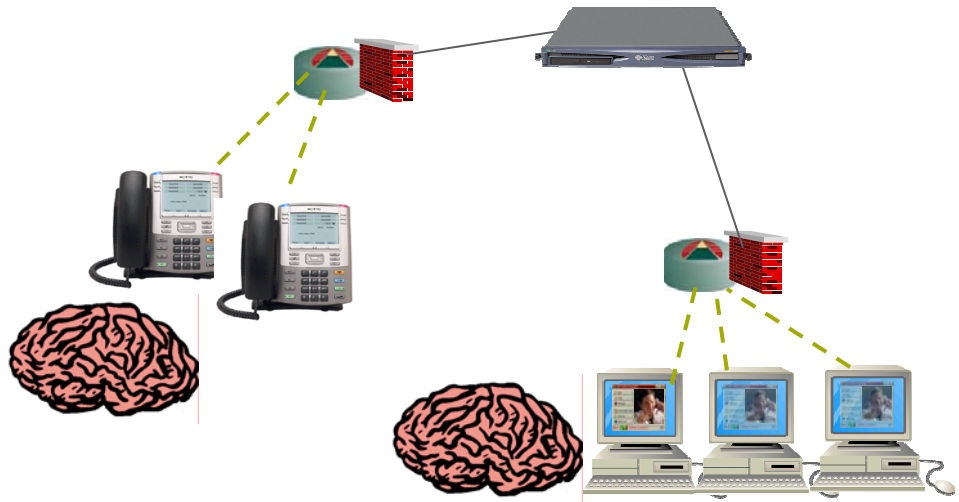
Traditional Enterprise Telephony

- **Centralized services, PBX**
- **Dumb clients**
- **Dedicated lines**

Voice over IP

- **Distributed services**
- **Intelligent applications**
- **NAT's, loss, delay, security issues, etc**





Traditional Telephony Management

- **Voice Quality**
  - **Continuity testing prior to session setup**
  - **OK for PSTN model – dedicated links, years of interoperability testing**
- **SLA**
  - **Mean-time-to-failure primary metric**
  - **Rarely is voice/session quality a factor**
- **Configuration**
  - **Typically involves proprietary protocols due to closed systems.**
  - **Learned over many years of working with systems.**
- **Policy/QoS**
  - **Not needed due to dedicated links, voice is the only service offered**
- **Billing**
  - **Ugh. Only useful for sticking it to customers.**
  - **But, then again, SOMEONE has to make money to offer the service.**

Retrofit into Network Management ?

- **Centralized management systems**
  - **Bad model for VoIP – service/application management is closer**
  - **Slow, tedious manual workflows**
  - **Reliance on SNMP – callhome issue, trust issue**
- **SLA – “SLA’s are Dead!”**
  - **Averaged metrics dilute useful data**
  - **Not tuned to actual user experience**
  - **Not tuned to specific application**

A Better Approach to VoIP Management

- Align management with application architecture
  - Management within VoIP client rather than centralized system -- auto gain control, echo cancel, adaptive jitter buffers and codecs
- Reduce manual process in configuration, use of standardized protocols and automated setup
  - E.g. PUBLISH/SUBSCRIBE model for configuration
  - Internet resources for configuration – DHCP, LLDP, etc
- SLA evolution
  - Metrics that reflect actual application performance and user experience
  - E.g. RTCP XR
- Billing
  - Usage of key resources such as PSTN links only.
- Priority/QoS
  - Yes, sometimes prioritization is helpful (see next slide)

Why use QoS?

- **Should be well understood that QoS DOES NOT CREATE BANDWIDTH.**
- **However…sometimes, traffic prioritization is helpful:**
  - **Bandwidth constrained networks e.g. small enterprises or branch offices, network edge, 802.11 Access Point's**
- **Oversold? Absolutely.**
- **Useless? Not entirely.**

Is the Emperor Wearing Any Clothes?

- **Undergarments!**