POLYCOM®

The Technological Roadblocks to Deployment of Ubiquitous HD Voice

Andy Allison

Jeff Rodman

Topics

- Network Needs for Voice beyond VoIP
- Carrier experiences
- Non-network challenges & considerations
  - Codecs in HD Voice
- Industry movements
- Solutions ahead

Success and Challenges

- HD Voice can be deployed successfully today
  - On-premises, intra-enterprise IP-PBX calls
  - Hosted, intra-enterprise ITSP calls
  - Hosted, conferencing services for both intra & inter-enterprises
- HD Voice is still an industry challenge for large scale
  - Inter-enterprise for point-to-point calling
  - Consumer to consumer

Networks Need Nothing Special for HD Voice

- HD Voice is contingent on VoIP connectivity
  - IP – to – IP connection
  - No PSTN between
  - SIP: Open Standards
  - HD Voice Data Rates: equal to G.711 or less
  - QOS: needs are comparable to narrowband's needs
  - Latency: HD & non-HD exhibit comparable latency

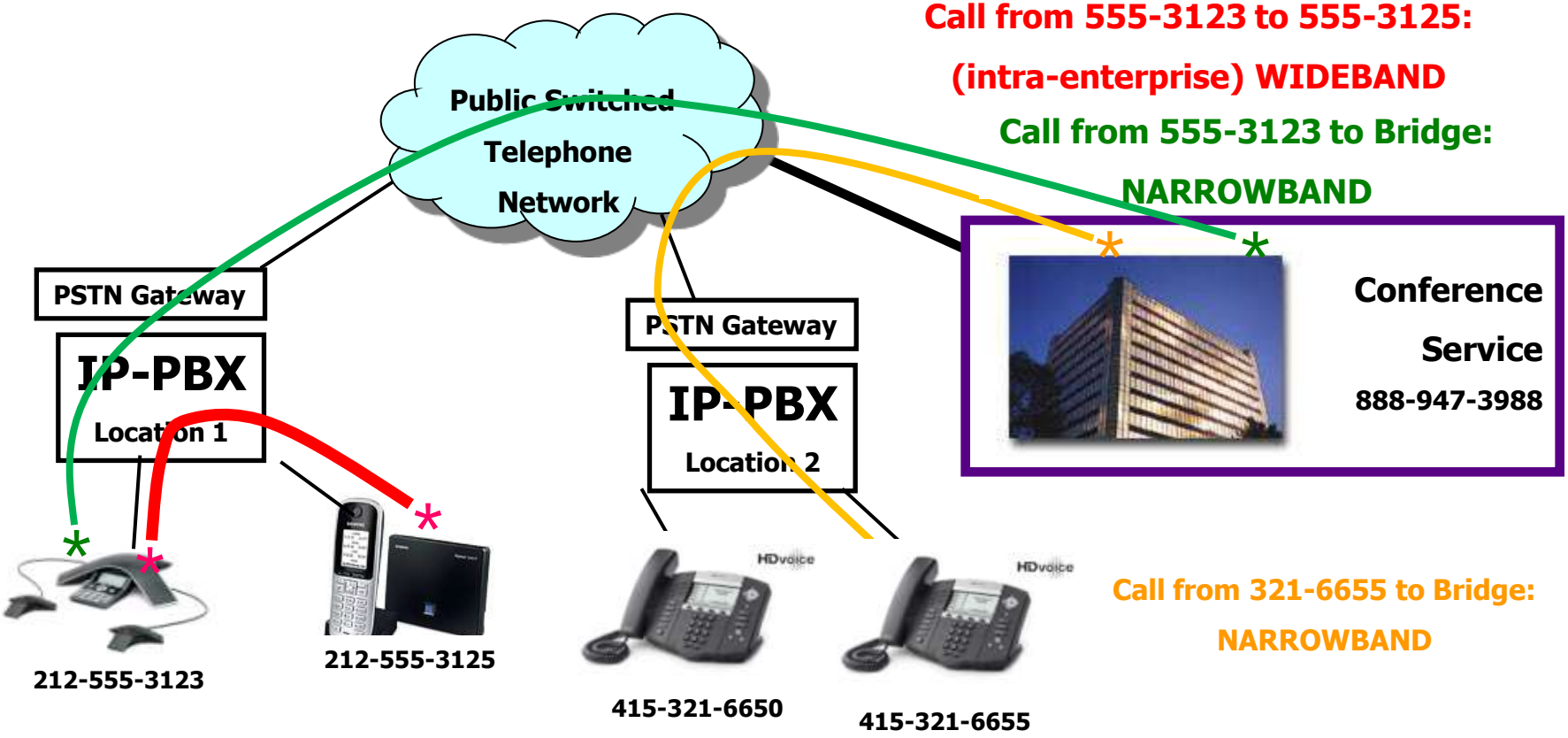
HD Voice Deployment Experience: ZipDX

- 4 years of HD Voice deployment experience
- HD Voice solution for hosted conferencing

- Key Learning
  1. Assure VoIP connectivity
  2. Have a simple way to dial

ZipDX

Enterprise Wideband Calling (Today)



- Any call that goes through the PSTN will be narrowband
- Corporate PBX's "default route" all 1-8YY calls to the PSTN

POLYCOM

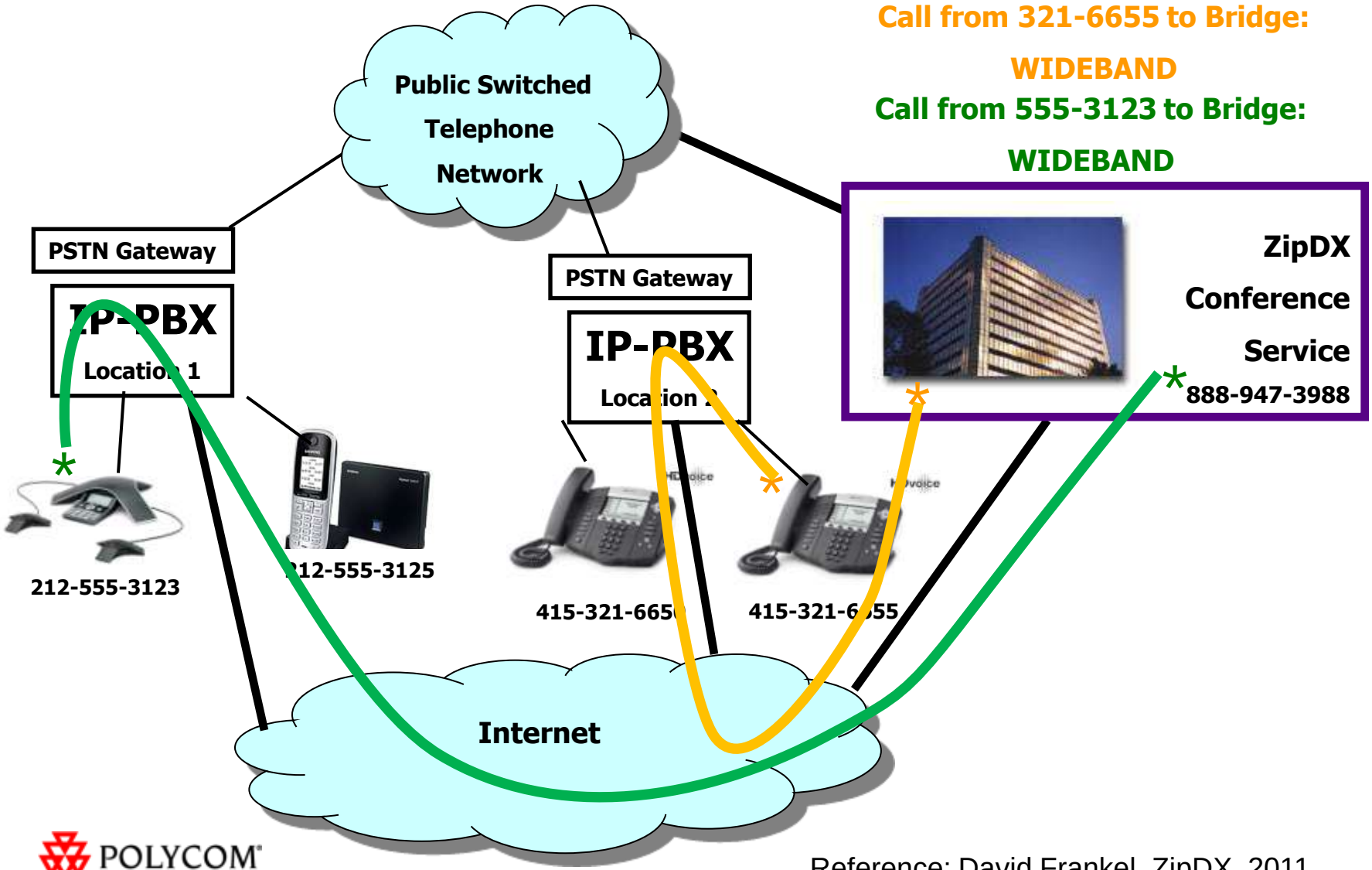
Reference: David Frankel, ZipDX, 2011

Solution: Peering w/ a Conference Service

- GOAL: Enable a BETTER ROUTE for enterprise callers to the bridge
- Several approaches:
  1. Have them dial a special extension to access conferencing
  2. “Trap” the conference number at the PBX and re-route it
  3. Use a Peering Directory that translates the number to an alternate address
- Options 2 and 3 are transparent to users
- We can also have the bridge call TO participants in HDVoice
  1. Enable PBX URI inbound dialing and program the bridge with participants’ SIP URI’s
  2. Add participants’ numbers to a Peering Directory queried by the conference bridge
- Now enterprise participants are HD-enabled for conferencing!
- Also possible to peer via a SIP Trunk provider or ITSP

Reference: David Frankel, ZipDX, 2011

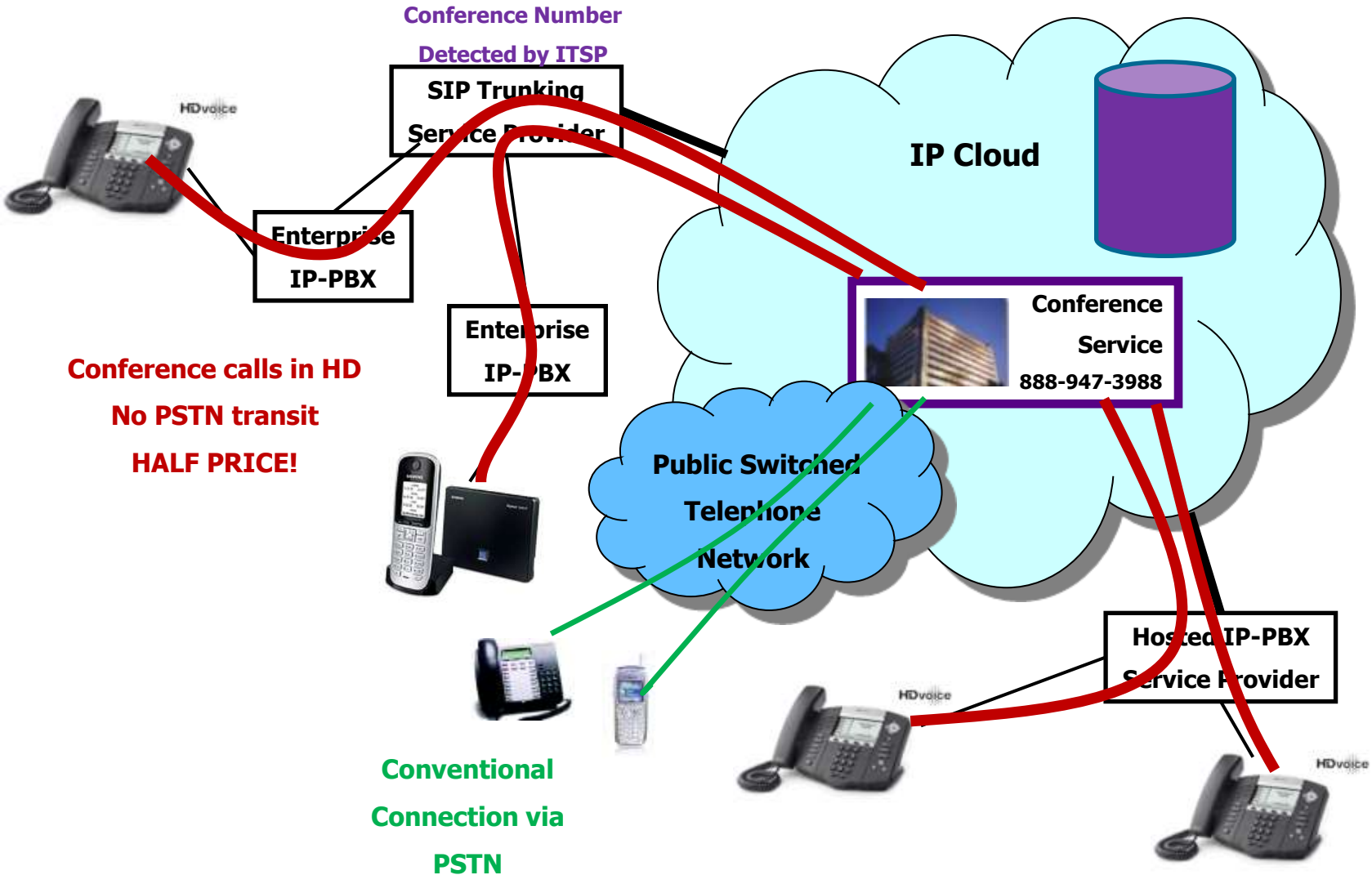
ZipDX: Enterprise Peered to Conferencing Service



POLYCOM

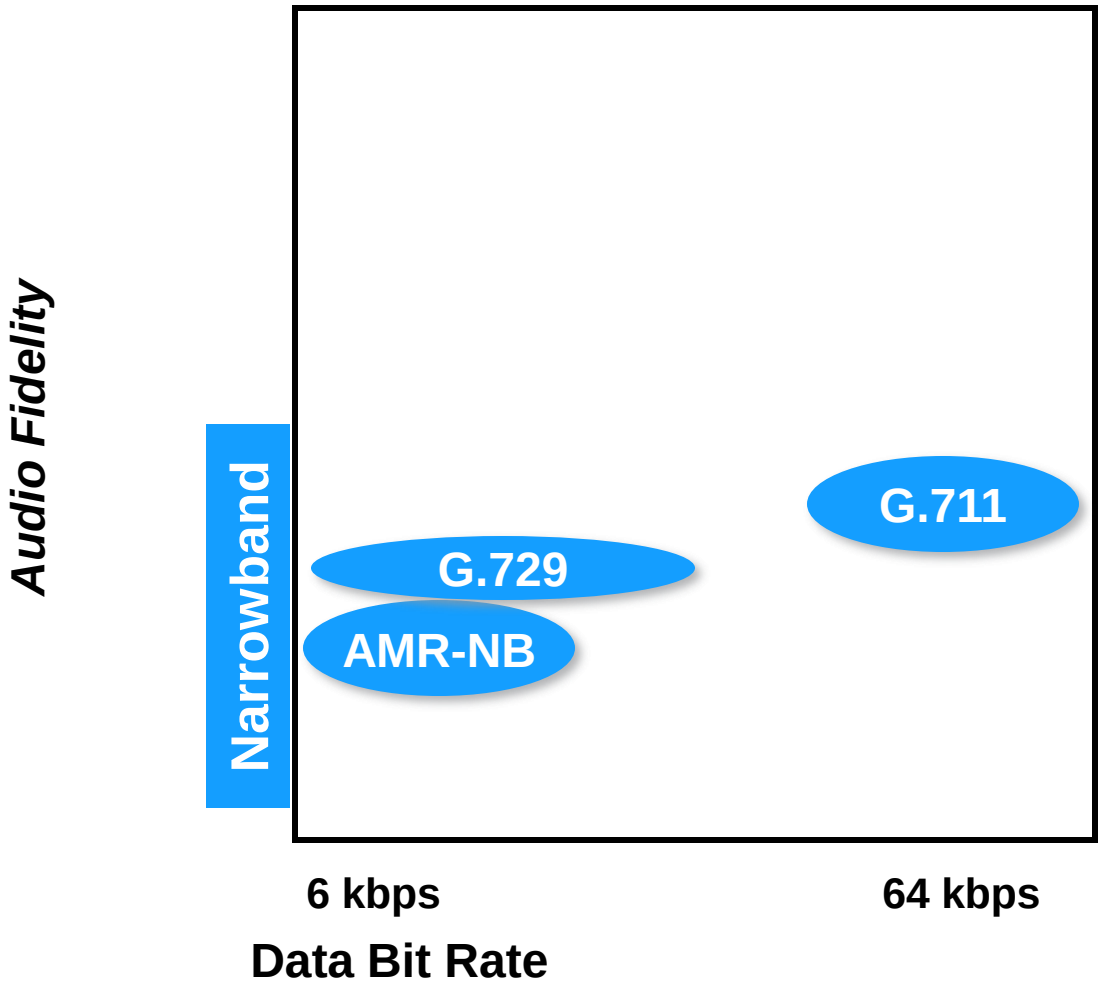
Reference: David Frankel, ZipDX, 2011

ZipDX: Via SIP Trunk Provider or ITSP



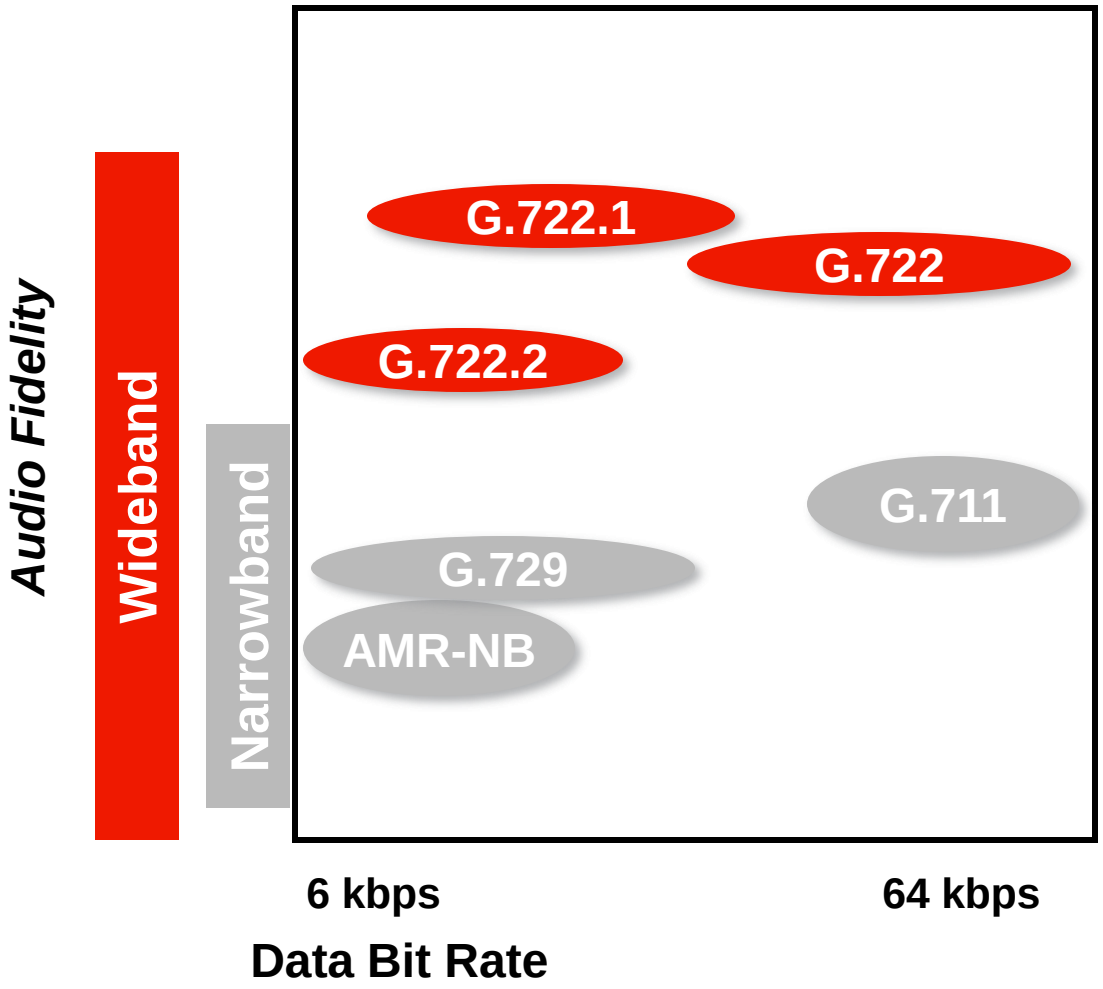
Reference: David Frankel, ZipDX, 2011

Voice Codec Network Concerns



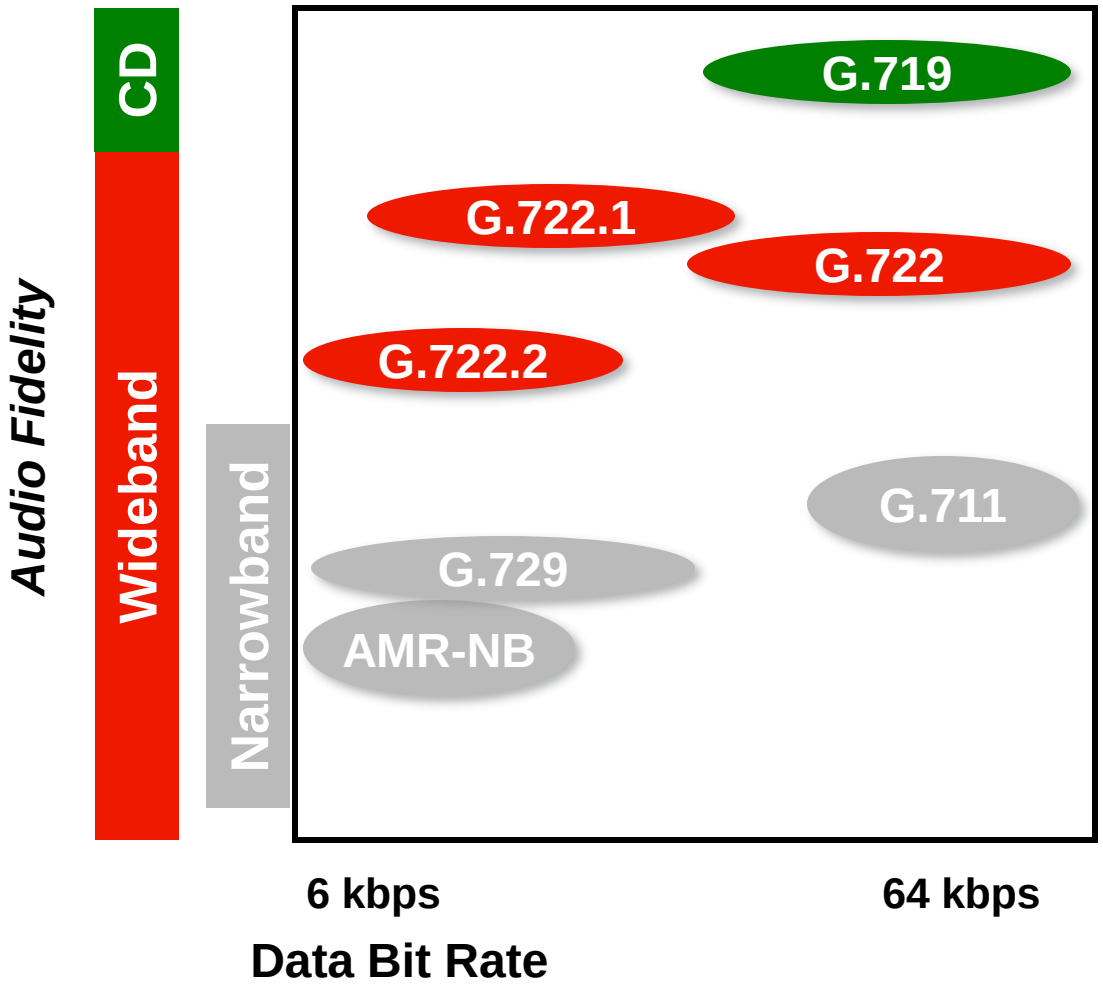
POLYCOM

Voice Codecs



POLYCOM

Voice Codecs



Real-World Issues in HD Voice

Problem	Mitigation
Mixed Protocols & Codecs	• Standards: G.722 at min
Bridging	• User Education • Network Design
User Escalations	• User Education • Minimize Island Crossings
Voicemail	• User Education
DTMF	• Standards – RFC2833/4733
Mixed Endpoints/Peripherals	• User Education

Real-World Issues in HD Voice

- B2B & Consumer to Consumer problematic
  - ENUM not yet widely adopted between Service Providers
  - HD Voice Consumer gateways and phones not yet widely deployed
- Possible Solutions
  - Technology: IETF – Ongoing Discussions for VIPR as a Service Provider workaround
  - Business: Service Provider ubiquitous peering

Industry Movements

- Wireless HD Voice rapidly deploying
  - Verizon announcement in Barcelona: HD on 4G in 2012
- HD Voice-capable endpoints are common
  - All Polycom's endpoints, most or all of other major mfgs
- HD Voice-capable ITSP's, IP-PBX, hosted voice providers already supporting
- “Key Findings of HD Voice 2011: Critical Mass include:
  - DECT and CAT-iq 2.0 will play a key role in enabling residential HD voice service.
  - Tier 1 providers are starting to address the need for ubiquitous SIP peering for enabling HD voice and video but Layers 8 and 9 — Money and Politics — continue to be the biggest obstacles.
  - The cable industry has done its homework for wideband deployment. Comcast is expected to be the first large North American service provider to deploy residential HD voice, perhaps starting trials as early as the end of 2011.
  - Verizon is emerging as a key leader for HD voice in the business and wireless arenas.”

Source:HD Voice News & TMC report, Doug Mahoney, HD Voice News, April 7, 2011

Solutions Ahead

- Field experience confirms the "wow"
  - Once potential customers hear HD Voice: closes deals
- HD Voice on SIP empowers carriers
  - Open standards, maximum usability
- VoIP = EoIP (everything over IP)
  - HDVoice is one instance of VoIP
  - VoIP opens the floodgates to UC
    - Video
    - New services, features and subscription plans

(A tip of the hat to Dave Gilbert, CEO Simple Signal for "EoIP")

Thank You!

POLYCOM

Peering Benefits

- HDVoice, of course
- In-call intelligence, like on-screen update of conference status
- Path to Video Calling & other advanced services
- Avoid use of PRI trunks for conferencing traffic
  - Move these long-hold-time calls to IP
  - Free up PRI's for other uses, or reduce number of PRI's
- Lower conferencing costs
  - Conferencing service provider enjoys lower cost for direct SIP connection
  - Passes savings through to enterprise customer
- No special equipment; no transcoding
- Minimal interoperability issues

Quality & Security?

- Voice over the Public Internet is VERY good if:
  - Enterprise has appropriately-scaled broadband connection(s)
  - Conferencing provider is tightly coupled to backbone providers
  - Monitoring tools are in place
- Multiple routes can be provisioned
  - For connectivity to conferencing provider's redundant infrastructure
  - Via IP addresses, DNS (FQDN), or SRV records
- Biggest security concern is inbound "attack"
  - Requests can be enabled only from conference service's IP addresses
- Maintenance is minimal
  - Conference service provider profile is relatively static
- Enterprise & Conferencing Provider can also be on private net