Application Note: Fax Transmission

Facsimile (fax) transmission was designed for analog voice networks and may not operate reliably over T1/NxT1 and voice over IP (VoIP) networks. Reduced reliability is due to fax communications using precise audible tones to send the fax data. VoIP technologies digitize and compress analog communications using encoding methods optimized for voice, not for fax tones. As such, there are a number of considerations when moving fax transmissions to a VoIP network.

Fax Considerations

- Uncompressed G.711 voice encoding will handle most fax transmissions well.
- Faxing will not work with G.729 or other voice compression technologies.
- For most reliable operation, fax devices should be set for G3 (14.4 Kbps) transmission not Super G3 (33.6 Kbps).
- Fax devices should connect directly to lines, not through a phone system. This minimizes the number of analog/digital/analog conversions in the transmission path which affect overall quality and reliability.
- Bandwidth capacity must be considered – each active G.711 call consumes as much as 90 Kbps of bandwidth. With T1 (1.536 Mbps) local access, a maximum of 17 simultaneous G.711 calls is possible (17 calls x 90 Kbps/call = 1.530 Mbps).

Available Options with Telecom One's Services

- POTS lines are always the simplest and most reliable option for faxing. Telecom One cannot guarantee successful faxing via any technology other than POTS.
- T1/NxT1 access with analog lines handoff can provide G.711 encoding on a per-line basis. All fax lines and numbers must be identified and flagged for G.711 when ordering.
- T1/NxT1 access with digital T1/PRI handoff – the entire T1/PRI must use either G.711 or G.729. Individual lines or DIDs cannot be specified for different encoding methods.
- SIP Trunking – Local service can provide G.711 encoding for faxes. Additionally the TCO-L3 Local SIP service platform can provide T.38 fax relay, which converts a fax to an image file for transmission over the VoIP network. G.711 or T.38 must be denoted for fax handling when ordering service.
- SIP Trunking – Long Distance supports G.711 encoding and T.38 fax relay. G.711 or T.38 must be denoted for fax handling when ordering service.

Questions to Ask

When considering a VoIP-based service, consider the following:

- Is faxing required?
- Is faxing a critical business need?
- Will a large volume of faxes be handled?

If the answer to any of the above is yes, carefully determine the best available option for handling of fax transmissions, beginning with a separate POTS line for each fax machine.