NSGDatacom

Facsimile Solutions for IP Networks

- *Automatic Facsimile recognition*

- *3 modes of Support for Facsimile*

- *Accommodates Long, Variable Delays*

- *Proven Operation*

- *World Wide Deployments*

- *Centralized GUI based Network Management*

NSGDatacom manufactures an extensive range of **Netrix VoIP gateway** products that provide **efficient transport of voice and Facsimile (Fax)** over IP. Our products are ideally suited for **maximizing throughput and maintaining high quality voice and Fax communications** on all types of IP links including long delay networks. Our **high fidelity voice and data compression** techniques lead the industry in bandwidth efficiency while retaining toll quality communications. They inter-operate with standards based products, and also allow **fast call set-up** on point-to-point connections without the need for an external soft switch to establish or tear down the connections. Nx2200 series VoIP product solutions also incorporate **extensive echo cancellation** and **dynamically extended jitter buffers** to compensate for the long delays inherent to some IP networks including multi-hop wireless and satellite links.

Many VoIP solutions are unable to provide reliable Fax communications for two main reasons. Firstly, any system that attempts to compress a Fax call using standard VoIP compression algorithms will at best reduce the speed of the fax dramatically and most likely cause the fax to fail even if the initial handshake between fax machines is successful. Secondly, if the Fax is not compressed but encapsulated using standard uncompressed VoIP techniques, propagation delays coupled with jitter and/or packet loss introduced by the network often cause Fax communications to stall mid-call.

Our Patented Fax over IP technology includes three proven methods of transmitting Fax over IP networks and is widely deployed to increase reliability while minimizing bandwidth requirements. The system operates by first recognizing that a Fax call rather than a voice call is being initiated and then directly communicates with the local Fax machine to optimize performance. Upon recognition of a Fax call one of three pre-selected modes of operation is used.

Default Nx2200 series Fax Mode: The default method of transmitting Fax over IP connections on all Nx2200 products incorporates automatic recognition of Group III Fax tones on any Voice/Fax interface. Upon initiation of a Fax call, the Voice/Fax module demodulates the transmission and responds locally to minimize timeouts resulting from long network delays. All data between NX2200 units is passed as a decoded digital signal. This minimizes the network bandwidth required, reducing the delay and greatly reducing the possibility of packet loss. Both the initial handshake between Fax machines and the digital fax data are locally demodulated and transmitted over the network as data at the raw data bit rate. The maximum data rate is 9.6Kbps with automatic fallback rates of 4.8Kbps and 2.4Kbps when the attached Fax machine requires a lower speed. Most IP network connections accommodate this mode of operation and **even networks with multiple satellite hops have been proven to operate reliably using this method.**

High Resilience Store and Forward Fax Mode: The optional Store and Forward Fax mode may be used when an IP connection is poor, with high error rates or long delays that cause normal Fax connections to time out or fail. In this mode of operation the Nx2200 talks directly to the transmitting fax machine and the complete fax is transferred to the Nx2200 prior to forwarding. Upon completion of the initial transfer to the local Nx2200 unit, the Fax file is transferred to the remote unit, which then places a call to the destination Fax machine and completes the transfer. Confirmation of successful end to end Fax transfer is provided to the initiating Fax machine upon receipt of confirmation from the remote Nx2200 unit by the originating Nx2200 unit. This mode of operation is rarely required except on exceptionally poor IP connections prone to very long delays or a high error rate.

Transparent G.711 Mode: In some High performance low latency IP networks, transparent G.711 VoIP may be an acceptable method of transferring Fax calls. Even if set to compress voice calls, in this mode the Nx2200 recognizes the Fax tones and passes the fax data without demodulation or compression. This mode of operation is only recommended when operating within a controlled closed network, since the speed and quality of outside network connections cannot be guaranteed. G.711 VoIP typically expands the 64Kbps required to support an uncompressed call to 85Kbps and is susceptible to delays and errors since it is dependant on end to end confirmation between Fax machines. This mode of operation allows fax speeds higher than 9.6Kps to be used.

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Netrix VoIP and Fax Product Solutions

- Combined voice, fax and wide area networking over a **single integrated platform** with multi-protocol data support

- **High quality voice compression** for analog and digital interfaces (FXS, FXO, E&M, T1/E1, PRI and BRI)

- Mixes standards-based and patented voice compression technologies (Up to 16:1 voice compression) to deliver **high quality voice over a satellite** at efficient data rates

- Both standards-based and Netrix-developed codecs coupled with the product's sophisticated queue buffer, jitter buffer and echo cancellation mechanisms, **toll voice quality is sustained, even over multiple satellite hops**

- **Calls can be locally enabled** and routed between units without the need for unnecessary satellite hops.

- **Sophisticated prioritization and QoS processes that ensure voice quality** is not degraded when heavy data traffic is also present

- **Powerful Centralized NetrixView configuration, diagnostics and Network Management system**

Nx2201

- 4 analog ports or
- 1 T1 digital (24 ch) or
- 1 E1 digital (30 ch)
- 1 Ethernet port

Nx2210

- Up to 32 analog
- Up to 7 T1 digital
- Up to 6 E1 digital
- 4 Ethernet ports

Nx2205A

- 2-4-8 analog ports
- 2 Ethernet ports
- 1 Serial WAN port

Nx2205D

- 2-4 T1/E1 voice or data
- 2-4 Ethernet ports
- 1-2 Serial WAN port

Nx2214

- Up to 32 analog
- Up to 7 T1 digital
- Up to 6 E1 digital
- 4 Ethernet ports
- Dual PSU AC/DC

NetrixView

- Full GUI network management system (NMS)
- Extensive monitoring, configuration, and diagnostics
- SNMP Manageable

NSGDatacom

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Specifications subject to change without notice