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**Natural Data Inc.**
**The IP Communications Company™**

- **Sarbanes-Oxley (SOX) Compliance for Incoming & Outgoing Faxes**
- **Manage and Distribute Data Using Your Existing Fax Machines**
- **Fax Documents Over the Internet**
- **Cost Effective, Easy to Use, Environmentally Friendly**

## How it Works

Natural Data's Digital Fax Service works similarly to Voice over IP (VoIP) services. Rather than a dedicated analog fax line, you simply plug your fax into our patented pending Fax Terminal Adapter. The FTA then plugs into your network connection. Simply configure the service once, and that's it. You can even use the fax number you already have (number portability required).

When a fax is sent, the fax gets immediately digitized and packaged in reliable secure TCP packets and sent to Natural Data Inc. secure Network Operations Centre ( NOC) for final delivery to its destination. If the destination is also NOAH enabled the fax is routed directly there. If the destination is an analog fax machine anywhere in the world, the data is converted back to fax data and sent the "last mile"over the phone lines to the destination.

Because Digital Fax Service uses the Internet connection you already have, a dedicated phone line is not required to send and recieve faxes, thus eliminating the telephone line and it's associated charges altogether.

Further, since Digital Fax converts your fax to digital TCP/IP information, it moves over the Internet just like email—securely, quickly, inexpensively, and with perfect reproduction. And once that data is in digital form, additional services can provide:

- Document storage and logging, providing full Sarbanes-Oxley compliance for fax machines
- Junk fax control
- Fax to email, email to fax, fax to fax
- Account cost recovery.
- Virus and worm free
- Multiple faxes can be received simultaneously

**Fax over Voice over IP**

Why can't the fax machine simply be connected to a Voice over IP line? While doing so seems pretty logical, Voice over IP wasn't designed to carry fax data, so fax over VoIP doesn't work reliably. Here's the technical reasons why.

There are two key reasons why sending faxes over a VoIP line is an unreliable solution:

1. Voice over IP technology uses UDP packets to send voice data to the receiving phone line. UDP packets are a special kind of IP communications that prioritizes timing over data integrity. UDP is useful when the data should move quickly to the other end, and when a packet being delayed is not acceptable. If a packet is delayed, UDP simply ignores it. That's why Voice over IP connections sometimes have breaks in the conversation — those are simply lost UDP packets.

UDP is great for voice. If packets are delayed, holding back the "message" until all the packets are received would result in the conversation being delayed, making it nearly impossible to carry on a conversation. So UDP is used, with the compromise that lost or delayed packets are ignored and short gaps in the conversation are acceptable.

However, UDP is very difficult for fax (or for that matter modem) data. Because faxes use a constant "carrier" tone to carry the data. That carrier is required to be constant for the fax to deliver the data to the other end. Breaks in the carrier are interpreted as a disconnected line and the transmission fails. Even error-correcting fax machines which can handle a short disconnect, will fail if there are too many disconnects or breaks in the carrier conversation.

Natural Data's Digital Fax Terminal Device ( NOAH) , receives the entire fax from the originating fax machine and then converts it into a digital file before transmitting, so the transaction is totally immune to network congestion or any other type of internet abnormalities.As a matter of fact, a "Noah" based transaction can even be delivered over satellite link or a coat hanger for that matter.No Quality of Service is required, unlike VoIP based products.Service transfers data using TCP packets, and no carrier tone is required. This is the same kind of communication used by email. For faxes, as for email, short delays are acceptable and packets that arrive at the other end out of order are reordered, retries are done as necessary until 100% of the data arrives at the destination. That's why Natural Data's Digital Fax Solution ( NOAH) can be relied upon for very high-quality faxing results.

2. With Voice over IP technology, your voice is converted to digital data—UDP packets as we said before. That conversion also requires compression. The voice compression technology is designed to take advantage of the changes in your voice as well as the gaps to use the bandwidth efficiently.

Fax machines use all the bandwidth available on an analog line—sort of like having dozens of people screaming into the phone at the same time using all the bandwidth. When the compression technologies hear that, they cannot compress the data to the point where it will fit in the voice bandwidth. In fact, the Voice over IP line, with compression, looks like a very narrow bandwidth connection to the fax. The only way the fax can connect is to reduce the speed of the fax modem, or baud rate, to some lower rate.

Natural Data's Digital Fax Service doesn't require the carrier tone at all. The fax data is immediately converted to TCP/IP packets and are transferred at the speed of email—dramatically faster than fax data.

In conclusion, Natural Data's Digital Fax Solution ( NOAH) provides accuracy and speed that is untouched not only by Voice over IP technology, but even by traditional analog lines! ~