TECHLINE COMMUNICATIONS, INC.

The Auto Attendant of Fax Reception

How do faxes get to the intended party now? Well you guessed it, in some form of manual process, i.e. mail room delivery system, departmental fax machine location, or personal confidential fax in the office. In today's age of communications, there must be another means to achieve delivery of a fax.

Routing inbound faxes using DID (Direct Inward Dialing) telephone services to your fax-switch can provide the communication solution you have been looking for. DID is a telephone network product which has been used for years to allow voice communications to reach the intended party without going first to a telephone receptionist. The same telephone service can now be used to deliver faxes across your LAN and save corporations money as well as bring new benefits to LAN users. Most leading fax-switch software products support DID routing of inbound faxes and Brooktrout offers the widest range of DID configured fax cards that will receive faxes at 14.4 Kbps and support all major fax-switch softwares.

How Are Faxes Received Now?

To effectively understand the benefits of deploying a DID based fax-switch solution, it is important to review HOW a corporation's fax delivery system has evolved so far. Upon review you will find a corporation uses, to some degree, a combination of the following methods:

Mail Room Delivery:

This by far represents the norm for every corporation either by floor or by building. The fax is received in the mail room and placed with a recipient's mail for delivery. In some cases, due to the urgent nature of faxes, staff is maintained to deliver faxes as they arrive. A derivative of this method is to place the fax machine at the receptionist's desk and have notification sent by telephone to the intended recipient when a fax arrives.

The mail room method for receiving a fax is synonymous to the receptionist method for answering the telephone. The same problems exist with both, i.e.:

- congestion on the line prevents the reception of a fax
- when messages are received, they can be mixed up with others
- fax pages are mixed or lost completely
- no confidentiality for sensitive documents
- delays in getting the information to the intended party
- what happens to communications when the station clerk is sick?

Centralized Fax:

A machine is placed strategically to service a given geographical area of a building or floor within a building. The machine is "self-serve" and used for both sending and receiving of faxes.

Relying on a centralized fax method for sending and receiving faxes within an office today is like asking your employees to use a telephone booth for communication purposes. Think about it! You need to wait in line to use the service, make arrangements with the other party to receive a document, otherwise risk losing parts or all of the information. Worst of

all, you leave the productive confines of your office when the need arises to use the fax. This by far is the most unproductive method for deploying fax services throughout an office.

The Personal Fax - Don't you wish we could all afford one?

For reasons of confidentiality, personal fax devices are generally deployed to senior management personnel to support the receiving of faxes, as much as sending.

To deploy fax machines on this scale is simply cost prohibitive for any corporation, i.e., separate telephone line and machine. However, this method has been embraced for the elite of corporations because it represents the most economical and secure method of fax communications when considering the value of their time to corporations and the sensitivity of the material they deal with on a day to day basis. The only other comparable service to rival a personal fax machine, is a fax-switch that offers both sending and DID reception.

How DID Works

DID routing provides an efficient and effective means for a LAN fax server to determine the intended recipient of a received fax. Without DID routing, LAN fax servers must rely on less efficient, less reliable, and less effective means for determining the intended recipient of a fax. DID fax routing assigns a unique fax number for every network user or network device (such as a printer); senders simply dial a typical telephone number (no special procedures are required). The fax server automatically delivers the incoming fax to the user over the local area network.

The DID method for fax routing provides several important benefits:

- **Speed:** faxes are delivered by the network server to the client end-user as soon as they are received - no more walking to the fax machine to pick up a fax, or waiting for a secretary or delivery person to deliver the fax.
- **Cost-saving:** since the network is delivering the fax, time-wasting trips to the fax machine are eliminated and companies employing delivery people or services can eliminate these expenses. Furthermore, dedicated fax machines (and the telephone lines that support them) for individuals requiring high service levels (for example, executives) or privacy (for example, Human Resources offices) can be eliminated entirely.
- **Privacy:** faxes are delivered directly to the addressee on the network. The fax in-box, with faxes lying open for everyone to see, is eliminated.

DID fax routing relies on the same DID phone line service widely used for voice phone calls into PBXs. A DID phone line is often referred to as a "trunk" because it is a single physical line that supports multiple phone numbers. When purchasing DID line service, the phone company assigns a string of phone numbers in numerical order to one or more DID trunks. When a phone call (voice or fax) comes into the Customer Premise Equipment (CPE) via a DID trunk line, the telephone company's central office signals to the CPE the phone number digits of the call dialed. In the case of a fax server, the fax board detects those signals and passes the digits along to the fax application software to route the fax once it is received.

There are some other important aspects of a DID trunk line that are important to understand. A DID trunk line is very different from a standard analog loop-start line. With DID trunk lines, the battery (or power) to the line is supplied by the CPE or the fax board (in the case of a fax server). With a standard loop-start line the power is supplied by the central office --- this is why damage can occur from connecting a loop-start line into the DID port of a fax board. In addition, DID trunk lines only support inbound calls. For that reason, fax servers utilizing DID trunk lines for inbound routing also utilize loop-start lines for outbound fax transmission.

A similar method for accomplishing inbound fax routing utilizes T1 phone line service. T1 service multiplexes 24 digitized voice channels over a single trunk line. T1 service provides Dialed Number Identification Service (DNIS) which provides the same routing benefits as DID. However, T1 line service can be used for outbound as well as inbound calling. In addition, fax application software that supports DID routing will also usually support T1 DNIS routing. T1 lines are typically used for high-capacity fax servers (at least eight ports or more) or fax servers that sit behind PBXs that can provide T1 line service but not DID line service.

Achieving the right configuration requires careful estimation of the network fax requirements. The quantity of DID/DNIS numbers that a network requires depends on the number of network users or destinations that will use the fax service. The quantity of DID lines or T1 channels that will be required to support those users depends on the expected volume of inbound faxes and the targeted service level (likelihood that a caller will encounter a busy signal).

How Much DID Service Costs

The costs of DID service varies from state to state, and sometimes even from city to city within states. Telephone service rates are set by state public utility commissions, and each has approached setting rates independently. US West Communications rates as of March, 1998 are:

- **Monthly Trunk Fee:** $56.56
- **Monthly Number Fee:** $0.15/number (minimum 20 numbers)
- **One-time Installation Fee:** $90.00

Here are the DID telephone service options along with the recommended configuration:

Trunk Type: Loop Start
Service Type: Wink Type
Signaling: DTMF
Digit Length: Four

How to Implement DID Routing

Implementing DID telephone service requires three components:

- **Fax server application software that supports DID routing:** Most leading LAN fax server applications support DID and DNIS routing, but check to make sure.
- **Fax boards that support DID routing:** Brooktrout offers fax boards with on-board support for DID routing and packages that support T1 digital service:
  - TR114 Series two and four channel boards are available in all-DID or "combo" configurations (half DID and half loop-start telephone interfaces). These boards also require an external power supply (available from Brooktrout).
  - TR114 Series two, four, and eight channel boards, with a T1 digital network interface board, are available to support larger networks.
- **DID or T1 telephone service:** Contact the business office of your local telephone company to arrange for installation of DID trunk lines or T1 lines.

Cost Perspective:

In companies today not currently using DID for fax reception, fax machine data grade line charges average approximately $70.00 per month. Based on the above DID cost analysis, a

corporation could displace approximately 4 fax machines without increasing their telecommunications costs. However, the company in return would receive 30 fax numbers versus just the 4 associates with the current fax machines. Furthermore, additional fax numbers will add only $6.95 per month for a DID based fax number versus $70.00 per month for a fax machine line.