APPLICATION NOTE

ISDN Orbitors Save / Payback !

Printing Business via ISDN

Canada - This printing company transfers data between two remote sites within the city of Calgary, Alberta, and also performs large transfers from one remote site located in Toronto, Ontario, 2000 Km across the country. All data is routed back to the central site for processing and printing. Plans for the future include adding two more smaller sites - and the possibility of allowing creative design houses to access a secure portion of the network in order to speedily download files over ISDN.
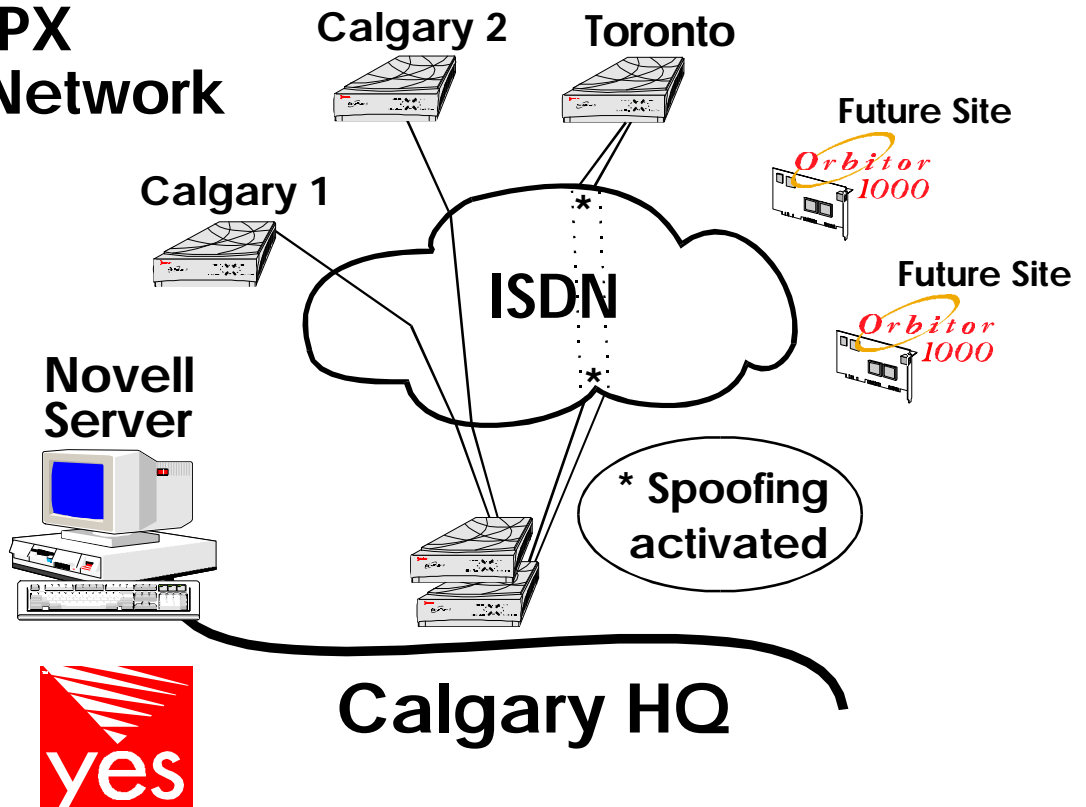
Prior to the installation of Orbitor 3000 ISDN IPX Routers, the company was transferring files via 9600bit/sec modems using PC Anywhere, a well-known remote PC access software application.

Files being transferred range in size up to 50 Mbytes. The following are some file transfer scenerios of a 50Mbyte file using various data transportmethods :

Transport	Transfer Time
9600bps modem	711 minutes
64kbps 1B ISDN	106 minutes
128kbps 2B ISDN	53 minutes
with 4/1	
compression	14

With the Orbitor's compression feature enabled, a graphics file can be compressed at up to a 6:1 ratio. Calculating with a conser- vative 4:1 compression ratio and both B channels, this 50Mbyte file would be transferred in approximately 14 minutes vs the 711 minutes by 9600bit/sec modem. The use of the Orbitor ISDN IPX Router results in a ***direct savings of 697 minutes of long distance calling charges*** for this transfer !
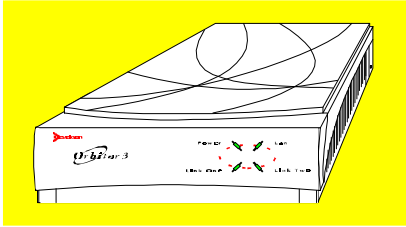
Novell IPX Network

Calgary 2   Toronto   Future Site

Calgary 1

Novell Server

ISDN

* Spoofing activated

Calgary HQ

yes

Develcon

The Instant Connection

Canadian ISDN users are fortunate in that their ISDN services are tariffed in the same manner as the telephone service —with no-charge local calls. ISDN time-based charges, in Canada, are only applied to long distance calls.

Elsewhere, local ISDN calls usually have time-based charges associated with a local call, and time and distance charges certainly also apply to long distance calls.

IPX Server 'Watchdog' Messages Can Keep the ISDN Connection Active ALL of the Time !!!

"Spoofing"

The Orbitor 3000s used in this application (and the Orbitor 1000s planned for future installations) incorporate a user-traffic-sensitive software technique that simulates a permanent ISDN call.

This technique is called 'Spoofing' and its purpose is to temporarily close the ISDN call whenever no user data is being transferred across the ISDN connection.

The goals are (1) to automatically reduce the on-line ISDN connection time, and therefore reduce the on-going cost associated with the ISDN service; and (2) make the connection and disconnection transparent to the end-users —with no action required from their point of view.

This printing company is connecting to a site over 2000 Km away, so it is important to keep the connection times low in order to control the ISDN costs.

Frames Across the WAN :

In addition to the actual user data information frames, a number of other frame types are sent across the link. Here is a description of the role of these other frames in remote Novell LAN communication:

Frames used by Novell IPX Routers :

RIP - "Router Information Protocol", RIP frames are used by routers to keep their routing topology database accurate.

"IPX Watchdog" frames - IPX Watchdog frames are only transmitted when a connection has been established to a server.

As the "Watchdog" name implies, when a session is established to a remote server, the server polls the client with watchdog frames and expects a response from the client to maintain the session.

IPX Watchdogs can be considered a critical frame that must be spoofed in order to keep a session active after the ISDN link is closed by the Orbitors in spoofing mode.

IPX SAP - "Service Advertisement Protocol", used to broadcast information that servers (services) are available.

IPX "Serialization" frames prevent the use of illegal copies of Netware in a network. They cross the link whenever it is open.

> **NOTE :**
> **Spoofing is also available with the Orbitor 1000/3000 IP router software!**

"Spoofing' works like this :

(1) A call is automatically established by the Orbitors when a user makes a request for a resource located on a remote LAN. If this call is a Novell IPX 'Client to Server' request (or an IP peer-to-peer request) then the possibility for cost savings using spoofing exists.

(2) The user transfers needed files, performs some work, and then becomes idle in the use of those remote resources (goes to a meeting, works on a local application, etc.)

(3) The Orbitors recognize that the ISDN connection no longer contains user/application information data frames (ONLY status packets are being sent across the link).

(4) The partner Orbitors acknowledge this condition, and notify each other that they must suspend the call and begin spoofing the remote connection. (They will handle this chore 'locally', until notified by their remote partner of a change.)

(5) Each Orbitor then responds by sending the appropriate message back to the originating server, 'spoofing' it into believing that it is receiving an "I'm still here" type of response back from the actual Novell client across the ISDN link. (RIP & SAP advertisements are also taken care of by each Orbitor during the ISDN call suspension).

(6) If there are no other active sessions established using the ISDN link, then the ISDN call is then terminated (closed).

(7) Whenever user data needs to be sent, the ISDN link is automatically re-established for that session.

Simultaneous Sessions

Several sessions can be simultaneously established and spoofed. With several sessions established to the same remote LAN, spoofing will only take the ISDN link down when there is no user data being transferred. When an Orbitor again sees user data, the ISDN connection will be automatically re-established.