PATTON

Applies to the following products
- SmartNode Model SN4900

Application Overview

IP digital trunks is the first service in a Latin American country giving branch offices of large corporations the ability to use digital trunks without being obligated to a large number of lines. The Latin American telco has implemented this application throughout the country using the SmartNode 4900 IpChannelBank. The key is a migration plan which allows users to continue to use their legacy analog phone system, precluding a large-scale refitting with all new IP phones and IP-PBX's. The service plans provided to small-to-medium sized enterprises are totally transparent to the user, for all appearances nothing has changed-only the accounts payable and IT departments will notice the change to VoIP over IP Digital Trunks (IP-DT). The SN4900 IP Digital Trunk solution provides normal telephone connectivity to the outside world with the ease of using extensions for calls within the office or between other branch offices. This application note considers a service plan with 3 IP Digital Trunks to the outside world and 8 analog phones within the office.

Description of IP Digital Trunk Application

The IP Digital Trunks provide VoIP phone connectivity to the outside world via a broadband connection, FXS ports are the interfaces for the office's analog telephones. (See figure 1.) The service is delivered through a digital IP network connecting to an IP switch, the SN4900 IpChannelBank. The SN4900 functions as a VoIP gateway for the outside calls and as an IP PBX for internal office calls.
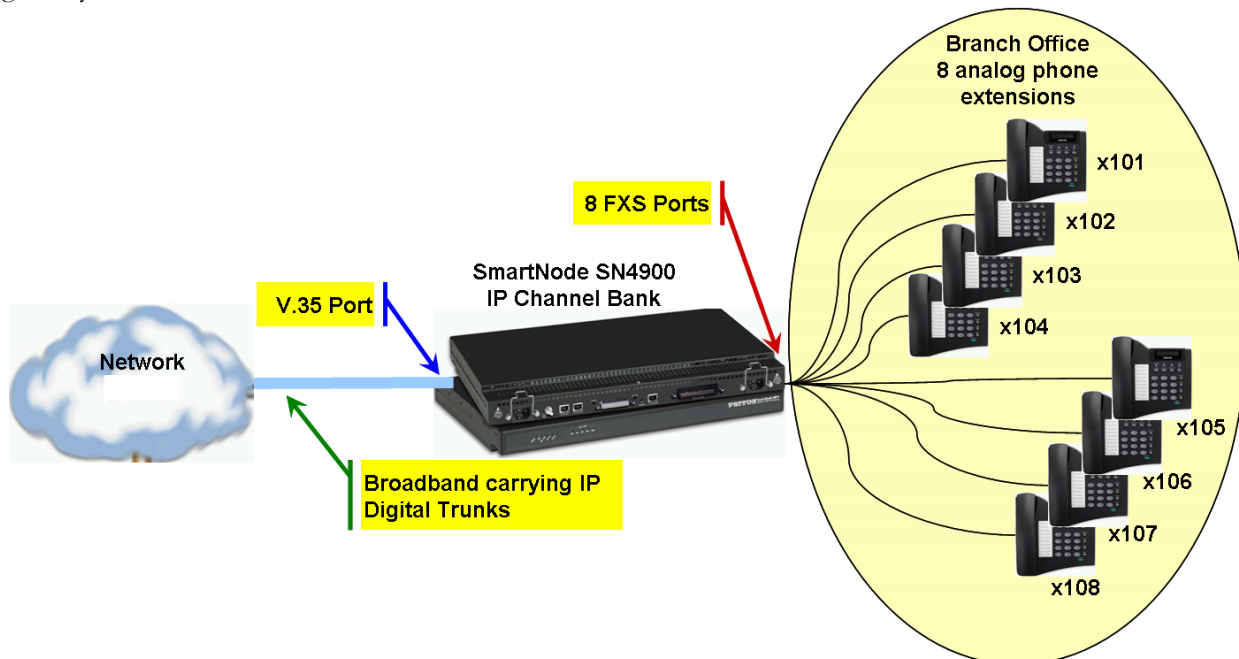

Figure 1. IP Digital Trunk Application

The bandwidth of the IPDigital Trunks is limited by the telco service but guaranteed by the SN4900 IpChannelBank to maintain toll-quality voice on all VoIP calls. The system is configured to carve out the appropriate

bandwidth from the SN4900's broadband connection. The remaining, and larger portion, bandwidth provides Internet or other IP network connectivity. To provide total user transparency, a full selection of services accompanies the various telco plans to include caller ID, call adminstration & routing, call waiting and call-on-hold, T.38 fax support with the option for POS terminal connectivity in retail applications.

Specifications of Offered Services and Benefits

The Service plan in this note allocates 3 IP Digital Trunks for local, and long distance calls, but also enabling calls via extensions (the 8 analog phones) within the office and between offices of the same company. For retail applications, Point of Sale (POS) terminals can be connected to an FXS port for authorizing credit cards using the same network infrastructure.

Each of the three digital trunks is the equivalent of a telephone circuit from the central office for handling calls outside the office. The fixed bandwidth of 64 kbps for all three IP Digital Trunks is limited by the telco service but simultaneously guaranteed by the SN4900 to maintain toll-quality voice on the VoIP calls. The capacity of the IP Digital Trunk can be configured according the service plan selected by the client. Two plans are currently being offered by the Telco. Plan #1 provides 3 simultaneous network calls and 8 analog phone extensions within the client site. Plan #2 provides 6 simultaneous network calls and 16 analog phone extensions. All extensions are internally accessible, so up to 4 simultaneous internal calls are supported. For Plan #2, up to 8 simultaneous internal calls. If all 3 subchannels of the IP Digital Trunk are active with calls, the other remaining 5 internal extensions can still call any other extension.

A summary of the various services is tabulated in figure 1.

Table 1. Summary of IP Digital Trunk services

Service	Benefits
Digital service via V.35 interface	Guaranteed minimum availability of 99.7%. Only one network connection delivers all calls. Toll quality on all calls.
IP Channel Bank (IP Switch)	No need to acquire more equipment, such as additional lines or a PBX.
Hunt group & analog extensions	Hunt group can be assigned a single phone number.
Caller ID	Identify the incoming caller prior to answering, if you so choose.
Call administration	Limit the number of 800, cell, and long distance calls.
Call routing	Transfer the call to any telephone number.
Call holding & call waiting	The user can put the current call on hold while answering a second incoming call.
POS terminal support per G.726	Transmission of monetary transactions to any selected bank over the network.
Fax via T.38	Offices can continue to use a legacy fax machine.

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