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\*Programming call routes using Protel's ExpressNet Software \*  
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Programming a pay phone properly is something all pay phone operating companies have to do. This is not a simple matter, as most pay phone administration software offers a wide variety of programming options. Pay phone administration software has to be complex, so that all the pay phone operating companies that use it will be able accomplish what they want and remain satisfied customers of pay phone manufacturers. Since Protel equipment appears to be the choice of most pay phone operators in this day and age, this article will discuss some of the more complex aspects of Protel's ExpressNet software. This article will help payphone programmers set up long distance routings, dial plan standardization, and other fun and annoying things.

This article explains advanced features of Protel's ExpressNet software, and assumes that you already have a working copy of that software. For information on how to get a working copy of that software please read my previous article "Programming Protel Pay Phones with Protel's ExpressNet Software," it has all the information needed to get started with ExpressNet. The main advanced programming topic covered is long distance call routing. This topic is important to pay phone owners as it allows them to use different carriers for different calls to minimize costs and maximize phone profits. There are a number of different ways to route long distance calls. These include dialing direct, dialing a Feature Group D access code first, and dialing a toll-free or other access number first.

To program special call routing using ExpressNet, you must choose "Call Costing Records" from the main menu, choose a record, and the choose to "Edit Routes." Protel ExpressNet provides up to 15 routes for coin paid calls. These are 8001 to 8015. The 8100 series of routes is for card paid calls using the card slot available on some Protel phones. Choose a route from the 8000 series to begin programming it. The first type of route that can be programmed is a route that uses a Feature Group D access code. These are the 101-xxxx type codes that select a long distance carrier. To program a route to use a code like this enter 07101xxxx00 in the access number field. The 07 at the beginning indicates the length of the code to be 7 digits, the 00 at the end tells the phone not to wait for another dialtone. On the next line for switch format, set it to 00 00 \*\*3\*000 00 00 \*. This tells the phone to add the number dialed by the pay phone user right on to the end of the 101-xxxx code. Alternatively, you could put \*\*8\*000 in the middle of the switch format line, which makes the phone standardize calls dialed as 7 or 10 digits to the 1+areacode+number format.

Another common type of long distance call routing used by pay phone companies is dialing a 1-800 type access number, waiting for another dialtone, then dialing 1+areacode+number. The long distance company operating the 1-800 type access number uses ANI to determine if the phone placing the call is allowed to use its service. To program a route like this, enter 111800xxxxxxx59 in the access number field. The 11 at the beginning indicates an 11 digit length, and the 59 at the end tells the phone to wait 10 seconds for another dialtone. You can change the last 2 digits to different values if the access number takes longer to respond, or if the sound is something other than a dialtone. A table appears on the route setup screen to help you choose the appropriate final 2 digits of the access number field. In the switch format line you can put 00 00 \*\*3\*000 00 00 \* once again. If you are worried about calls to the 1-800 type access number failing, you can change the last 2 digit

field of the switch format line to a route between 01 and 15, in case you don't want the phone dialing direct when the 1-800 number fails. This type of access number doesn't have to be on an 800-style number. It could also be on a local 7 or 10 digit number.

There are also some variations on routes using a 1-800 type access number. Some phones will dial either their own number, or a special authorization code before dialing 1+areacode+number. Programming this requires using a different set of numbers in the middle part of the switch format line. This number is 1\*3\*000. This tells the phone to send "Authorization code 1" after the dialtone on the access number, then 1+areacode+number. Unfortunately, "Authorization code 1" is not defined here in the routes menu, or even in the costing record menu. It is defined in the site record, which means it must be entered into the computer for each and every phone. To set an authorization code in a site record, go back to the main menu, choose 1 for site records, choose a phone number, arrow down to Authorization codes, and hit enter. Authorization codes must match the route number, and are entered in Protel's format with 2 length digits before the actual code, and 2 extra digits that tell the pay phone whether to listen for a tone after dialing the authorization code. To have the phone dial it's own number, that number must be programmed in as an authorization code. There is no magic value to make the phone automatically insert it's own number.

Other programming tricks that can be accomplished with routes include dial plan standardization such as forcing 10 digit numbers to be dialed, adding # to the end of dialed numbers, and even dirty tricks like forcing the phone to dial \*67 all the time to make calls show up as "Private Number" on caller ID devices. You will actually have to program in 1167 instead of \*67, because ExpressNet couldn't handle having the \* in the access number field. So, to make this happen, put 04116752 in the access number field. The 52 at the end makes the phone listen for another dialtone, instead of just blindly dialing after 1167. Some central-office switches will miss digits if a phone keeps right on dialing after 1167. Something more useful is forcing the pay phone to dial # at the end of every number. This can make calls go through faster on switches with bad translations and goofy timeouts. To make a route that adds # to every number, go to the routes menu, choose an unused route, enter 00 in the access number field, then enter 00 00 \*\*3\*000 00 00 \* on the switch format line, then drop down to the "Field Separator and End of Data Marker" line and enter \*001#00. The help file on this line isn't very clear, but \*001#00 means that the end of data marker # is 1 digit long and the 00 means the phone shouldn't wait for any tones after dialing #. The initial \*00 means there is no field separator. One final useful route trick is 10-digit dialing standardization. This allows calls that are dialed on the pay phone without 10 digits to actually work by making the pay phone dial the correct dialing pattern with it dials out. Just enter 00 for an access number, then put 00 00 \*\*4\*000 00 00 \* on the switch format line. You can even add a # at the end if you want, using the field separator and end of data marker from the previous example. Now pay phone owners can still offer 7 digit dialing even in area code overlay areas!

When creating routes to make the pay phone do wild and crazy things to route calls, you should save 2 routes for special purposes. Those 2 are the 211 pay phone repair number, and the number to the ExpressNet computer. 211 is commonly used for pay phone repair, but the FCC assignment of 211 for Community Information and Referral Services may force pay phone operators to

switch to 611. To set a route for 211, enter the phone number you want the pay phone to call in the access number field, followed by 00, then make the switch format line look like 00 00 \*\*\*\*000 00 00 \*. The phone will just dial the access number and nothing more. To make the phone dial this special number instead of 211, this route must be attached to the cost band for 211, which is cost band 80. Read ahead to learn about attaching routes to cost bands. The other special route is for the ExpressNet computer. This route is only necessary if the pay phone must dial more than 11 digits to connect to the ExpressNet computer. This could happen if you want to use any long distance carrier that requires dialing an access number. If the ExpressNet computer number as dialed from the pay phone is 11 digits or less, just enter it in the Options and Registers section. Programming the special route for the ExpressNet computer is a multi-step process. The ExpressNet software requires that route 8015 must be used. No other route will do. Step one is to enter 9999999999 (10 digits of 9's) for the reporting number in the Options and Registers section. The next step is to open the Costing Records menu, choose the Routes menu, choose route 8015, and enter your long distance company access number at the top of the screen, then go down to the switch format line and make it read 00 00 11\*\*000 00 00 \*. The middle section may only need to be 1\*\*\*000, depending on the long distance carrier access method. These lines tell the phone to send Authorization codes 1 and 2, or just code number 1, respectively. The final step in making this route work, is to go to the site record of each phone you want to program like this, and enter some authorization codes for route 8015. Authorization codes are entered in Protel's wonderfully goofy access number format. If your long distance carrier requires the pay phone to dial its own number or an authentication code, enter that as authorization code 1, and enter the real phone number of the ExpressNet computer as authorization code 2. If your long distance carrier requires just a destination number, enter that as Authorization code 1 only. Now special route 8015 is complete, and the pay phone can phone home if it needs to and it will be using your preferred long distance carrier.

Now that all of these routes have been programmed, they aren't doing much good unless the pay phone is programmed to actually use them when placing calls. The way to do this is by associating routes with cost bands. Cost bands are accessed by option 2 in the Costing Records menu. Protel phones have 137 cost bands to choose from, but the bands 80 and above have pre-defined special purposes. Cost bands are the mechanism that makes the phone decide how much money to charge for any given call. Among the fields on the screen for each cost band is one called "Route." It is located in the 5th column and 2nd line of each cost band on the cost band screen. To use one of the routes already programmed into the phone, just enter a number here between 1 and 15 that corresponds to the route you want to use for that cost band. Route 0 is used for direct dialing without any special handling. Once a cost band has a route associated with it, calls assigned to that band will be routed in your special way and not dialed directly anymore. To assign phone numbers to cost bands, choose option number 2 from the costing record menu, and assign area codes and prefixes to cost bands there. That topic is covered in detail in my earlier article.

Now you should know a lot more about making a Protel pay phone route calls to different long distance carriers for different reasons. Protel's pay phone route feature is one of the more powerful tools in directing and redirecting calls dialed from pay phones. The next article in this series will

cover a little more on call routing, including how to redirect phone numbers and make the phone dial something that pay phone user doesn't expect. There are two methods that can be used to do this, and both of them will be covered. Also, there will be some stupid programming tricks. For more information about Protel phones and ExpressNet, visit [http://www.protelinc.com/main/tech\\_support.asp](http://www.protelinc.com/main/tech_support.asp). Please remember to use pay phone administration software responsibly.