



Requirements Document

PC User Interface

Final

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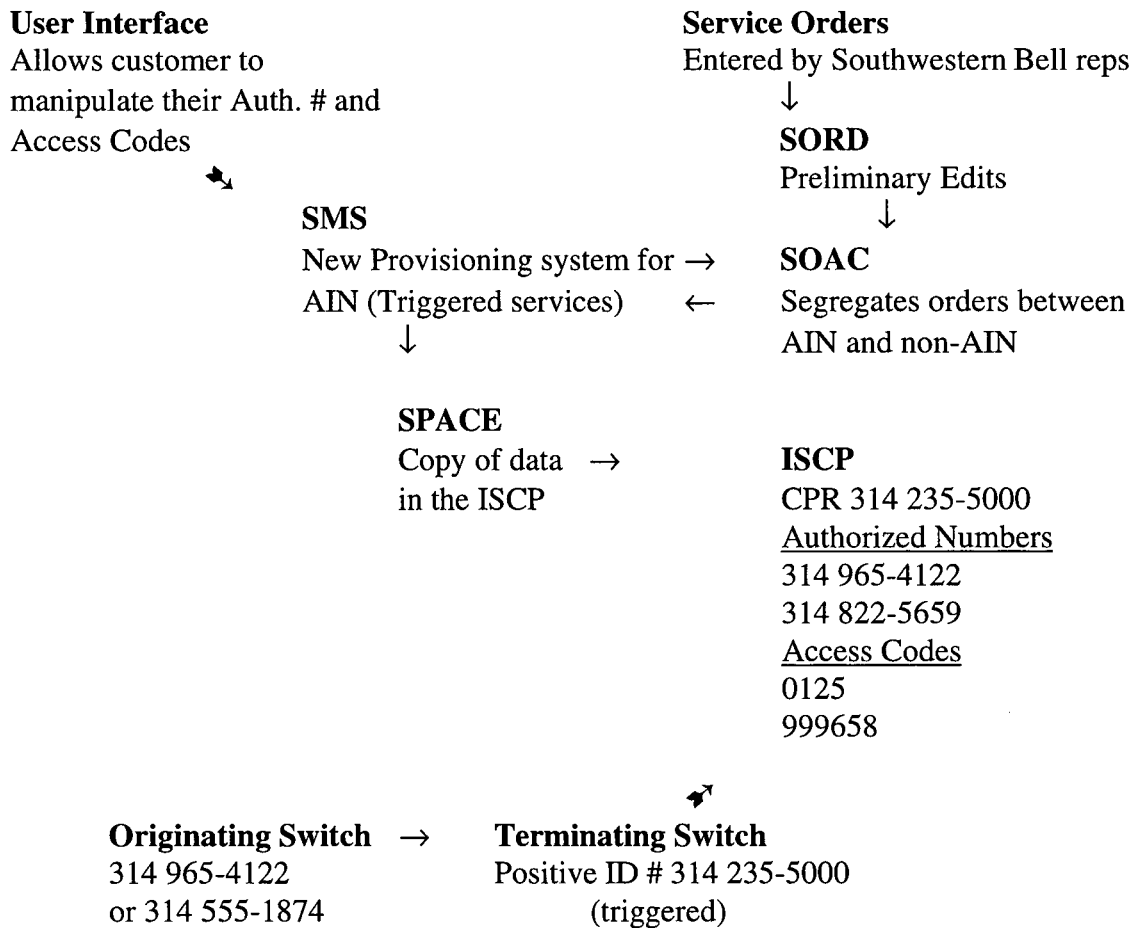
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Description of AIN Network

Below is an example of how the Advanced Intelligent Network (AIN) interacts with our existing switch network. The service that is demonstrated is Positive ID. Each of the systems mentioned in the diagram is described on the following pages.

AIN Flow (using Positive ID as the example)



AIN: Originator from 314 965-4122 dials the Positive ID-equipped line of 314 235-5000. The switch notices the trigger against 235-5000, and queries the ISCP for additional information. The ISCP reads the Call Processing Record (CPR) for 235-5000, sees that the customer has Positive ID and checks the screening list to see if the originating number is authorized. 314 965-4122 is on the authorized list, so the ISCP sends a message back to the switch to go ahead and complete the call.

If the originator dialed the Positive ID equipped number from 314 555-1874, the ISCP would find that the number is not on the authorized telephone number list and provide the opportunity for the caller to enter an access code. If the caller did not enter 0125 or

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999658, then the call would be disconnected. If a correct access code was input, the call would complete to the dialed number.

SPACE: (Service Provisioning And Creation Environment): SPACE carries a copy of the data in the ISCP. SPACE is the network element used for data queries and management by the selected users that have access to it, such as repair. The users do not access the ISCP directly, because we would not want to interfere with call processing by performing data manipulations on the same platform. Updates made through SPACE are input into the ISCP immediately.

AIN SMS: AIN Service Management System: Because of the centralized nature of the AIN provisioning, Southwestern Bell needed a new system to analyze service orders and mechanically provision (create) the CPR (call processing record - unique for each working telephone number (WTN)) in the ISCP.

SOAC: The SOAC system receives all service order activity from SORD. SOAC contains a series of tables used to identify AIN involved USOCs and FIDs. SOAC isolates the AIN involved service orders and sends them to SMS. Upon successful provisioning, SMS replies to SOAC and SOAC sends a message to MARCH where the AIN trigger is set or removed at the switch.

User Interface (DTMF): The customer's CPR contains subscriber data. Southwestern Bell needs to provide a mechanism for customers to establish and maintain their list of 500 Authorized Telephone Numbers and 100 Access Codes. One mechanism to accomplish this is through DTMF updates (Interactive Voice Response - IVR). A customer dials a Southwestern Bell number and follows voice prompts to add or delete numbers or access codes. However, to expect customers to have only the DTMF option to manipulate such extensive data is not providing adequate customer service.

User Interface (PC): Thus, the need for a user interface was born. We built a PC interaction between the customer and Southwestern Bell. Customers will load software on their local PC, review and change their subscriber data and send an updated file back to Southwestern Bell. This file will be received by SMS who will send the updated copy to SPACE and subsequently, the ISCP. The file that SMS sends to SPACE will be a complete replacement of data, not transactions adding or deleting entries. Also, the customer will still have the option of updating their data through DTMF. However, we currently do not have an adequate way to pull the current view, **INCLUDING** DTMF updates off of the ISCP. Thus, any updates made through DTMF will NOT be reflected in the User Interface tables. The customer will be alerted that making updates through DTMF will not be reflected in their PC lists and it is the customers responsibility to keep the two systems in sync. We realize that this is less than ideal and hope that future enhancements will allow for two way communication.

The User Interface described in this document includes:

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- ◆ The communications software delivered to the customer on diskettes for communication with Southwestern Bell called *App Manager*
- ◆ The specific application software called *Positive ID software*
- ◆ The hardware that is the engine for our Application called the *Application Server*
- ◆ SMS where our data will reside
- ◆ All of the elements of communication including modem banks and RAS.

Description of Positive ID

Positive ID provides security for access to business phone lines. Positive ID enables subscribers to prevent all incoming calls from being connected, except those from given telephone numbers or those using a customer defined Access Code. Positive ID can be used to limit access to Computer Systems and Remote Access to PBX Features.

Calls are allowed to complete to a Positive ID line only if an authorized CPN is delivered by the SS7 network with the call or if the caller dials an access code when prompted. An 'authorized number' is one that the subscriber has included in their screening list of up to 500 Authorized Telephone Numbers. If no CPN is received or the CPN is not present on the screening list, then the caller may be able to input an access code. The Positive ID subscriber can also create a screening list containing 100 Access Codes. These codes could be distributed to company employees much like SWETN access is handled today; one access code per department. The Positive ID subscriber may choose to use the Authorized Telephone Number screening list, the Access Code screening list or a combination of both.

If the caller into the Positive ID equipped line is not calling from an authorized number and does not input a correct access code, then the call will be sent to a denial announcement and then disconnected.

User Interface

Service Negotiation

A customer will contact SBAs or Majors to order the Positive ID service. The service rep will negotiate all of the service parameters with the customer. Only certain service elements are described in this document. To obtain complete information about Positive ID, references should be made to the Marketing Service Description or Marketing Methods.

The SCBMX USOC is the Positive ID USOC. It establishes the service, creates the CPR, assigns the trigger and sets up billing for the service.

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The CARC FID is placed on the service order with the customer contact name and number behind it. This FID is mandatory on any order with SCMBX. The name behind the CARC FID is the person who will administer Positive ID within the customer's company. This FID is necessary because of the PC User Interface.

The ASID FID is optional on the service order and is used for the sole purpose of validation when a customer calls to have their IVR password reset.

There are minimum requirements to run our software and the service rep that negotiates the order should confirm that the customer has the necessary equipment. To run our software, each Positive ID customer will need to have:

- PC using a 486SX or higher microprocessor
- A minimum of 8 MB of RAM
- Hard disk with 15 MB of free space
- One 3.5" high-density disk drive
- VGA or higher resolution video adapter
- A mouse or compatible pointing device
- Operating Systems of DOS (version 5.0 or higher) or OS/2 (version 2.11 or higher)
- A Hayes compatible modem with a minimum speed of 9600 baud
- Microsoft Windows version 3.1 or later, Windows for Workgroups (version 3.11), or Windows 95

These requirements mean that the interface will not be available to customers operating in an exclusively Macintosh or non-PC environment and we do not support text-based emulations for VT-100s. If a customer cannot meet these requirements, Southwestern Bell will not provide them with the necessary hardware/software. They may either manipulate their data through DTMF exclusively or they cannot purchase Positive ID.

Service Order Flow

The service order will flow as normal, with some additional processing. The trigger will be provisioned against the line based on the appearance of the SCMBX USOC.

In addition to normal processing, SMS will send a message to the Application Server indicating that a new WTN (working telephone number) has been established and a customer contact must take place to establish the User ID. SMS should send the message of a 'pending' Positive ID number to the application server even before the due date on the service order. This is necessary to allow the subscriber time to set up their list prior to the effective date of their service. This way, they are ready to activate the service at the same time that they begin paying for it. This also implies that SMS will have to send the application server a message if a pending order is canceled. The application server would then need to back-out the WTN that was canceled.

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Outward activity on the Positive ID USOCs will be communicated to the server as well. Unlike inward activity, which should cause the subscriber's User ID to be activated within the server prior to due date (so the customer can pre-build their lists prior to due date), disconnect orders should only be worked on their due date. This ensures that the customer can manipulate their lists until the disconnect is due. SMS will send both inward and outward activity to the server as soon as it is received so the server must be programmed to "queue" the disconnect orders until their due date.

Note: The server will keep copies of service order information for 60 days after the completion date of the order. After that, the orders will be deleted, but the server will maintain the active date of the order for editing purposes.

Southwestern Bell has established a new "application coordinator," who is the Southwestern Bell employee that handles the Helpdesk and Support functions for the Positive ID User Interface.

Customer Contact

For all inward activity, a customer contact will take place. The application server will receive a message from SMS that a new Positive ID TN has been ordered. The server will populate an Admin Tool that is used by the Southwestern Bell application coordinator to maintain User IDs and other customer information. The application coordinator will review the Admin Tool daily and all new customer activity will be highlighted.

The application coordinator will place a call the customer contact. If that contact is unavailable, the coordinator may leave a message with a call back number. Attempts should be made to reach the contact at least 4 times a day (2 hour intervals) until they are successfully contacted.

From the customer, the application coordinator will ascertain the following information:

1. What is the telephone number that Positive ID was ordered against? This is a simple validation procedure to ensure that we are talking to the customer contact.
2. Is this the first telephone number that you have equipped with the Positive ID service?
3. If yes, then ask about the hardware and software configuration of the contact's PC. Do they have our minimum requirements covered? (note: the service rep should have asked this, but always confirm.) What kind of modem do they have? What speed? Do they have enough memory? etc...
4. If yes, acquire an address to send the diskettes to and load the address into the Admin Tool.
5. Ask how many users (one or two) will have access to this Positive ID number.
6. Establish user IDs associated with the Positive ID number following the user ID format, assign the initial password to equal the user ID. The user IDs will be entered into the Admin Tool and a duplicate check will be performed. If the entry is a duplicate, a new user ID needs to be assigned.

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7. The User ID assigned to the customer will also be their "Network ID" that will only be necessary when the customer installs the software. Along with their network ID, assign a Network password, that will also be used only in the install process. Note: Only one 'network password' will be assigned per company. Therefore, two User IDs using the same network password can be logged on at the same time.
8. Ask the customer for the company name that they would like associated with this Positive ID number. If subsequent numbers are ordered, they will be grouped by company name. Each company name should be checked for duplicity. If a duplicate, ask the customer to be more specific with their company name, (i.e. by adding a department) so that no confusion occurs.

Therefore, the following information will be held on the Admin Tool and should be displayed to (and edited by) the application coordinator:

- Positive ID WTN (not editable)
- Contact Name and Number
- Diskette Mailing Address
- User IDs assigned (up to 2 fields)
- Network password assigned
- Company name

Based on the information populated by the application coordinator, the Admin Tool will produce a customer contact form containing the information outlined above. The application coordinator will send that form to the customer. An example of the form is an appendix to this document. The application coordinator will also fax a form to a centralized distribution center with the customer contact information. The distribution center will prepare a package containing the Application Manager software diskettes and the User Guides to send to the customer. By following this practice, the diskettes and the User ID information will arrive separately at the customer location.

If the customer contact is an existing customer, the following will occur:

1. If this is NOT the first telephone number that you have equipped with the Positive ID service, then the coordinator will ask for the established User ID.
2. The coordinator will ask the contact to confirm the Company name and the WTN that has been previously connected with the provided user ID for verification.
3. The coordinator will then add the new Positive ID TN to the profile for that user ID.
4. Inform the customer contact that no diskettes will be issued.

To accomplish this task, the Application Coordinator needs to be able to search the Admin Tool by user ID, view the existing profile for that user ID and copy information to be associated with a new Positive ID TN. The coordinator should be able to search by (1) User ID, (2) Positive ID TN, (3) Contact Name and (4) Company name.

An existing user may call the application coordinator to make changes to user profiles. When such a call is made, the coordinator should call back to the contact name and number to ensure that a hacker is not calling the coordinator pretending to be an existing

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client. The customer contact should then provide the new User ID information including any changes, deletions or additions. If a User ID is added to a Positive ID number, then a new set of diskettes and User guide, etc. should be sent to the address provided for the new user.

If a customer calls the business office to only change their contact information, then the rep should refer them to the application coordinator and no service order will be issued.

Updates on customer contact information will be sent from the Admin Tool to the server to SMS by sending the CARC FID followed by the new information onto each file that is delivered to SMS. SMS will update all FIDs received from the server, including CARC.

NOTE: A customer cannot order Positive ID by talking straight to the application coordinator, because the coordinator will be unable to originate the service order required to establish the Positive ID logic and trigger against the new line.

User IDs and Passwords

The Positive ID customer will have to follow the certain User ID and password standards. The User ID is 6 characters in length following the SUITS ID standard. Our customers User IDs all begin with CUSxxx, with the xxx being just a numeric string.

The password must be at least 6 characters and no more than 8. There must be at least one special character which cannot be either the first or last character. The special character must be one of the following "0123456789!@#%\$". Also the password cannot be the same as the user ID. The password will expire every 30 days and a user cannot repeat a password for six months. In other words, the password used in January cannot be used again until July.

Both User IDs associated with a Positive ID telephone number will have the same access and any changes (additions/deletions) to user IDs will have to be completed by calling the Southwestern Bell application coordinator. Any time a new Positive ID number is ordered to be part of an existing group, a customer contact will be initiated to set up the user IDs appropriately.

Resetting Passwords

If a user forgets their password, they should call the application coordinator. When such a call is made, the coordinator should call back to the contact name and number to ensure that a hacker is not calling the coordinator pretending to be an existing client. The customer contact should then confirm the need for a password reset and the password will be reset to equal the User ID.

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Application Manager Diskettes

Three diskettes will be mailed to the Positive ID customer. They should arrive within seven days. Service Negotiation time for Positive ID should be quoted as 10 days to allow for US postage. The three diskettes will contain Application Manager software which is a Southwestern Bell External Customer Access package. It includes all of the dial-up logic and a communication package licensed from CORE. The customer will load the software following prompts. The prompts will include asking the customer for their Network ID (User ID) and Network password, their Comport, the dial-in number that they are trying to reach and other questions.

When the Application Manager software is loaded, an App Manager User ID and password screen will appear. Based on the information populated on this screen, the Application Manager software will create a tool bar with icons for each service that the customer has purchased. Our customer's tool bar will contain an icon for Positive ID. If they click on this icon, the Positive ID application will be launched. The software contains versioning information. When the customer tries to access Positive ID for the first time, the software will notice that they do not have the correct version of Positive ID on their machine (in fact, they have NO version of Positive ID at the moment.) The software will be downloaded to the customer's machine automatically in a process that takes anywhere from 5 to 20 minutes, depending on modem speeds.

No new software should ever need to be sent to the customer, because both App Manager and Positive ID will contain versioning logic. If a customer logs on with an outdated version of either software, the program will download the new software directly (with the customer's concurrence). The App Manager diskettes will be mass produced by the same organization that is copying the Bill Plus diskettes.

By following this procedure, Southwestern Bell has one communication package to maintain (App Manager) for all external customers and the product-specific packages are independent. Diskettes will only be sent to the customer for the initial install and all future updates are made on-line.

User Log-On

After the customer has successfully completed their installation process, future log-on attempts will be easier. The customer will click on the Application Manager icon in the Southwestern Bell menu. They will be prompted for their User ID and password and then they will connect their modem to Southwestern Bell and bring up their tool bar. From the tool bar, they click on Positive ID and the application will launch.

Based on their User ID, the customer will be provided with a choice of Positive ID numbers to work with. The user's choices will be for the active view of each Positive ID number that they have access to, as well as a pending version if one exists. For example, the screen may look something like this:

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<u>Positive ID Number</u>	<u>Service Date</u>	<u>Status</u>
(314) 235-5000	1/12/96	Active
(314) 235-5000	4/2/96	Pending
(314) 331-3100	1/3/96	Active

Once the customer selects a Positive ID number, the application server will launch a query to SMS to pull down the tables (authorized number table and access code table) associated with that Positive ID number. The application server will also 'lock' that Positive ID number so that no other user can access it for editing purposes until the initial user has completed their work.

When the first query is launched, prior to the customer's service order completion date, the server will ask SMS for pending tables at the service order completion date. SMS will have blank tables that they will deliver back to the server.

NOTE: SMS has to send back data for either every AIN service. The server will ignore any extraneous data and only deliver the Positive ID information to the user's screen.

When the customer has created some data, they will "submit" it to Southwestern Bell and software will request an effective date on the changes. If the customer inputs an effective date prior to the service order completion date, then the software will display an error message and ask the customer to enter an effective date on or after the service order completion date. Once the due date is validated, the server will send the tables to SMS who will pass the data through front-end edits and save it until the due date.

If a user wishes to change their data on several occasions prior to the due date on their order, then they may revise their pending view and resend it to SMS when additional changes are made. They may do this up to 25 times before a file is made active.

Note: For accounts in suspended status, SMS will respond to the query from the server requesting their tables with a USOC indicating that the account has been suspended. The software will only allow tables on suspended accounts to be viewed, no edits can be made until the suspension status is removed.

The Tables

Authorized Telephone Number Table

This table will be a fixed length of 500 entries. The system will automatically filter the customer's entries according to the following rules:

1. The number must be a 10-digit number. The system will automatically surround the NPA portion of the number (area code) with parenthesis and display a dash between the NXX and line number. For example, the user types 3142351122 but the system will display it as (314) 235-1122.

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2. The first digit of the NPA portion cannot begin with a 0 or 1 (i.e. 156 will never be a valid NPA).
3. The first digit of the NXX portion of the number cannot begin with a 0 or 1 (035-1940 will never be a valid telephone number).
4. The telephone number cannot contain any spaces or non-numeric characters. If the user attempts to type a non-numeric character in the TN field, the system will simply beep and ignore the keystroke.
5. All telephone numbers in the table must be unique. This edit is not enforced until the user attempts to submit their changes, allowing the copy and paste functions to be used to duplicate entries.

This table will also contain two comment fields of up to 30 characters. Semi-colons will not be allowed in the comments field. The first comment field is intended for the name associated with the telephone number. The field will be populated by the customer (Southwestern Bell will NOT pull calling party name off of any databases), preferably in a last name, first name format to enable the customer to sort on last names of their authorized numbers.

The second comment field will be for something like the department of the person associated with the number or some other handy piece of information. Again, the data can be sorted by this field as well.

By default, the table will be organized in TN order, ascending. This will be accomplished by the software that will sort (or re-sort) the list into TN order before sending the file to the server. When the data is brought down from SMS, it will be in TN order because that is how SMS received it.

Displayed on the screen should be a derived count of the number of authorized telephone numbers that reside on this list. When the customer reaches their 500 limit, the 'new' button will be shadowed and they will not be able to add any more entries. They need to delete some entries before they can proceed.

The number fields AND comments fields will be stored by SMS, but the comments fields will be stripped off prior to SMS sending the messages to SPACE. When two-way communication is available, we will need to coordinate how the SMS tables will be populated by SPACE without losing the comments fields - but that concern for much farther down the road.

Note: The user interface will keep track of the data being manipulated. If the user only changes information in the comments fields, then the interface will send a message to the server indicated that only comments have changed. The server will then send only the comments fields to SMS (without the TN fields) and will mark the change as "local only." This will tell SMS that this update should NOT be sent on to SPACE and the ISCP, but should be saved within SMS.

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Access Code Table

This table will be a fixed length of 100 entries. The system will automatically filter the customer's entries according to the following rules:

1. The access code string must consist entirely of numeric digits 0 through 9. No non-numeric characters (including spaces) are allowed.
2. Access codes must contain at least 4 digits and no more than 7 digits.
3. Access codes can contain leading zeros (e.g. the code "0092" will not be treated as "92").
4. All access codes in the table must be unique. This edit is not enforced until the user attempts to submit their changes, allowing the copy and paste functions to be used to duplicate entries.

If the software detects that an entry has an error in it, a dialog box will appear explaining the specific problem.

This table will also contain one comments field of up to 30 characters. No semi-colons will be allowed in the comments field. The field will be for the department of the person associated with the number or some other handy piece of information. The data can be sorted by this field. This field will also be stored by SMS, but will be stripped off prior to SMS sending the messages to SPACE.

By default, the table will be organized in Access Code order, ascending. This information will also be sorted by the user interface before it is sent to the server. The data will be sorted by 1st digit, 2nd digit, 3rd digit, etc. regardless of the length of the access code. Therefore, 9901 will appear after 9123456; and 91234 will appear after 9123 (because a blank sorts higher than a number.) This is the standard sort for variable length parameters.

Displayed on the screen should be a derived count of the number of Access Codes that reside on the list. When the customer reaches their 100 limit, the 'new' button will be shadowed and they will not be able to add any more entries. They need to delete some entries before they can proceed.

The same methodology will apply for changes only to the comments fields for the Access Code Tables as applies for the authorized TN tables.

The Activity Log

An Activity Log will be laid out as follows:

<u>USER ID</u>	<u>Positive ID Number</u>	<u>Activity</u>	<u>Date/Time</u>	<u>Effective Date</u>	<u>Status</u>	<u>Status Date/Time</u>
KC1463	(314) 331-2151	Sent file	12/23/95, 08:56	1/3/96	failed	12/23/95, 09:42
KC1463	(314) 235-5000	Accessed	1/3/96, 08:30			
MH1234	(314) 235-5000	Sent file	1/3/96, 13:21	1/20/96	canceled	1/3/96, 17:35

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KC1463	(314) 235-5000	Cancel send	1/3/96, 17:05	1/20/96	completed	1/3/96, 17:35
MW3344	(314) 235-6000	Sent file	1/3/96, 18:35	1/3/96	pending	

When a user chooses to retrieve the Activity Log, they have the option to narrow the search to request log entries associated with one specific Positive ID number or all activity after a specified date. If they do not narrow the search, then all entries related to all Positive ID numbers (that the user has access to) for the last 90 days will be displayed.

The log will be saved on the server and individual transactions will age off 90 days after their completion date.

The valid values for the "Activity" field are:

- ♣ Accessed - Positive ID number tables reviewed.
- ♣ Submitted - Positive ID number tables were reviewed, changes were made and sent to SMS. The due date allows users to see which files were sent for immediate queuing and which files are pending for some future date. A Positive ID table that has been modified will show two Log entries, one for 'accessed' and one for 'submitted.'
- ♣ Cancel - Positive ID file that was pending was canceled before it was made active. The due date allows users to know which pending file was canceled by which user, if there happens to be a lot of activity on a given Positive ID account. Note: Cancel actions always queue immediately.
- ♣ Replaced - A pending file was edited and re-submitted to Southwestern Bell. A Positive ID table that was modified will show two Log entries, one for 'accessed' and one for 'replaced.'

The valid values for the "Status" field are:

- ♣ Pending - the files have been submitted, but confirmation has not yet been received from SMS that the tables have become active. Files sent with a future date will, of course, be in pending status for quite some time. Files sent for immediate queuing will be in pending status for the length of time that SMS and SPACE take to process the information. This duration will hopefully be within just a few hours.
- ♣ Completed - the files that were submitted have been provisioned and are now active. The confirmation from SMS has been received.
- ♣ Failed - the submitted files failed somewhere along the way. This will not include a reason description for the failure, because it is probably a problem that requires Southwestern Bell intervention rather than the users. The Southwestern Bell folks will begin working on the fall-out immediately and will notify the customer if any action is required by them.
- ♣ Canceled - pending file was canceled before it was made active. This will allow users to see who sent a file and who canceled it and the timeframes that these activities occurred.

Note: Each Positive ID telephone number is sent as one file. Therefore a customer can work on several numbers during one session, but each Positive ID TN will be a unique

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entry on the Activity Log and each Positive ID TN can have unique due dates and/or can be canceled independent of the other Positive ID TNs being manipulated.

Creating, Sending and Canceling a Pending File

The customer will have an active file and may have one Pending File per Positive ID number. Once a pending file is created, they have 'read only' capability on their Active File (no changes). They have the option to send the pending file to SMS with today's date as the due date (immediate queuing) or a future due date. There is no ability to save a pending file without sending it to SMS.

The customer may choose to edit the Pending file. When they attempt to edit a pending file, they will receive a confirmation message that by editing a pending file, they are canceling their existing pending file. The interface will not attempt to cancel the existing pending file until the customer tries to SUBMIT the new file. Therefore, there is a chance that the initial pending file could become active while edits were being made. If this occurs, a message will be presented to the Customer.

If the user is logged on when a pending file becomes active, the server will update the status on the Activity Log and change the information on the Activity Log from pending to completed.

Additionally, as soon as a pending file is created by any one user - the Active File is 'read only' and no additional pending files can be created. Any authorized user can cancel a pending file, not only the originator - and this activity is captured on the log. The log will show who created the pending file and sent it to SMS and who canceled the file, if that occurred.

We also will establish a 'throttle mechanism' that prevents users from tying up our SMS to SPACE link. The parameters for this will be that one user cannot change one Positive ID number more than 10 times in a 24 hour period. The user ID/Positive ID WTN combination will be the key.

Time-outs

There are two types of time-outs relative to the Positive ID interface. The first is a 'screen saver' type function that requires the password to be re-entered after a period of inactivity. This period has been defined as 15 minutes. Therefore, after 15 minutes with no keystrokes, the customer's keyboard would lock, relative to this application, until the password is re-entered. The second time-out function is when the modem link will be dropped. After 30 minutes of no keystrokes, the interface will tell the server to drop the connection. As long as the application remains up on the customer's screen - they will NOT lose any of their changes. When they resume the application and they attempt to send the updated file to Southwestern Bell, they will have to wait for 30-45 seconds for the modem connection to be reestablished.

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The second (modem) time-out has lead to some new parameters. If the customer edits and submits a new file, the List screen (of all Positive ID numbers and their status) will be refreshed. If the customer is in 'view' mode and exits back to the List screen, no refresh of the list screen will be necessary. If the customer is on the List screen, they can refresh this screen by using the refresh key on that screen.

Customers will be dialing in using an 800 number, of which Southwestern Bell will be paying the toll. Marketing (who is footing the bill) has agreed to the above time-out intervals.

Working with Multiple Positive ID Numbers

While a customer is working with one Positive ID number, they may choose to open a second number. The procedures will be similar to a single open number - the user may choose between an active view or a pending view, if there is one. The customer may 'toggle' between the two Positive ID numbers similar to how a Microsoft Word user may toggle between open documents. Just as when a single Positive ID number is opened, the server needs to 'lock' the second Positive ID number from being manipulated by any other users, once it is opened.

From one Positive ID table, the customer will be able to copy the entries and paste them into the table for a second Positive ID number. This will assist customer that may have several Positive ID numbers against which they would like the same (or similar) screening lists. The copy function will be performed in a shift/click selection of rows similar to how File Manager operates in Windows. Click and Drag functionality will not be available in the first release of the software.

Interim Procedures between 4/1 and 9/7

Establishment of User IDs

Because SMS will not be available to pass new Positive ID accounts to the Application Server until 9/7/96, we need an alternative method. SORD has prepared a mechanical search for any inward or outward activity on the SCMBX USOC and copy those orders to a file that is e-mailed to the server. The information needed from the order is the WTN associated with SCMBX, the action code on the SCMBX USOC, the value behind CARC with the customer contact information and the due date of the order. SORD will review the pending file each night and notify the server on a batch basis once a day. The server will then update the Admin Tool once each day with the new information.

Sending Tables to SPACE

The second concern for this interim period is how new tables sent from the customer through the Application Server will make it to SPACE. This procedure will involve the CNOC and a manual work-around until 9/7/96.

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CNOC Notification of the Positive ID Update

At midnight each night, the Positive ID server will be programmed to find all updated tables. A batch of changed files will be sent to the CNOC. The server will send *both* tables as well as the triggered line via FTP. The CNOC will *not* verify any of the files, rather, they will always load both files.

CNOC Processing of the Positive ID Update

Someone in the CNOC will be responsible for receiving the FTP'ed file each morning. This will entail receiving the FTP'ed file and sending it to the appropriate ISCP node SPACE server, opening the Positive ID CPR, editing the table call variables, importing the new customer list files, activating the new Positive ID CPR and finally, confirming back to the Positive ID server that the Positive ID order has been updated in SPACE. The tables are 'embedded' tables in the CPR.

CNOC Confirmation of the Positive ID Update

The person assigned to this task will be responsible for confirming that the CPR with the new tables has been activated. This will be accomplished by FTP'ing a message back to the server. Every attempt should be made to complete the FTP'ed file prior to 12 noon on the day received.

The Authorized Telephone Number file on the application server will include the authorized telephone number and 2 comments fields for a total of 3 columns. The Access Code table has the 4-7 digits access codes and only one comments field, for a total of 2 columns. The application server will strip off all comments field and add a row identifier for the file that is to be sent to the CNOC (so the CNOC will receive two tables, each with two columns). The TN table is a fixed length of 500 entries, regardless of how many are populated and is laid out as follows: 10 digit number with no spaces, a tab and then a row identifier (just a sequential number that does not need to be maintained on the server), followed by a carriage return. The row identifier is 3 digits; 001, 002, etc. The Access Code table lay-out is similar; 4 to 7 digit access code, a tab, then a row identifier followed by a carriage return. The Access Code table is a fixed length of 100 entries. The server will always send the CNOC both the access code table and the TN table, regardless of which one was updated.

The server will need to recognize the due date on the service order that SORD stripped off and NOT send tables to the CNOC until the due date has passed. If the CNOC receives files prior to the due date, then they will attempt to provision and will find no CPR to load the tables into.

During the interim period, we will allow users to cancel a pending file only until midnight when the file is FTP'ed to the CNOC.

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Transition at 9/7

At 9/7, SMS will need to populate their copy of the tables. A flat file will be created by the server and sent to SMS to be uploaded. The lay out of this table has been negotiated and is available on request.

The SMS transaction lay-outs are very important to this project. They are not included in this document, but are available on request.

Dial-Up Procedures

The RAS team is currently reviewing the issues with external customer access and timing and RAS is expected to be ready 8/1/96. Therefore, this project initially moved forward by using existing facilities available for CNA-Net.

CNA-Net

CNA-Net currently consists of two terminal servers with 32 modems in total. Terminal servers can support 16 modems each and additional terminal servers may be added to the existing set-up up to the limit for Ethernet traffic. There is no capacity concern relative to adding a new terminal server.

After considering capacity and traffic loads, we determined that we will add Positive ID to the CNA-Net modem pool on 4/1/96 without the addition of a terminal server or more modems. No one wishes to purchase modems for just a few months before RAS is in place.

There is also a piece of hardware, a Sparc 10, referred to as the 'Network Management Station.' The network is structured such that inward traffic comes into one of the 32 modems, served off of one of the two terminal servers. These terminal servers are connected to the Network Management Station. After the traffic passes through the Network Management Station, it is passed on to one of the Applications Servers. All application servers are connected to the same Ethernet line and they must all reside on the 7th floor of the Data Center. This will not be an issue for Positive ID, because the CNA application server that we will be sharing is already there. The server that Positive ID will reside on at 4/1/96 is a Sparc 690, affectionately referred to as ELROND.

Also, Positive ID and CNA will reside in a 'quarantined LAN,' because there is one Ethernet interface coming into the application server and there is a second Ethernet interface connecting the server to the Southwestern Bell WAN. By having the two Ethernet interfaces, we have minimized our risk relative to connectivity into our network.

We have a unique 800 number for Positive ID. This is a nation-wide 800 number, in case we have Positive ID administrators outside of the five state region. Marketing (allocated

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to each market area) will pay the 800 bill associated with the dial-up line. The Dial-in number for Positive ID is 1-800-286-5169.

With Application Manager, we will distribute a software package called "CORE" to the customer. We are paying CORE based on the number of licenses in use. Many communications packages were researched and CORE was chosen by the support staff and it was also the least expensive.

CNA Network IDs

The CNA network administrator provides each company with a Network ID and password. One Network ID and password can be assigned for multiple machines. The customer types this into their system during the set-up procedure. This ID and password are also loaded into our Network Management Station. When the customer dials up into our system, the connection will go to the server with the network ID for the specific company (group of customers) machine. Once that is validated, the Network Management Station hands off to ELROND (the application server) who validates the keyed in user ID and password. Therefore, the first network ID is a 'hand-shake' between machines (their local PC and our Network Management Station) and the user is not involved. Then, there is the application server log-on process where the customer will enter their User ID and password on the screen. Once that is validated, the user can access the Positive ID application.

The Network ID and password are each a string of digits that is unique to each company that receives our software. The string values are mailed to the customer on the customer contact form. The Positive ID application coordinator will need to be responsible for obtaining valid Network IDs and coordinate the Network IDs are sent to the customer's and are loaded onto ELROND. This coordination effort should not be a problem because the CNA-Net support staff and the Positive ID application coordinator will reside in the same group.

RAS Changes

When RAS is available in 3Q 96, then several CNA-Net specific items will change. For example, we will no longer process incoming calls through the Network Management System described above. Incoming calls to our 800 number will terminate into a RAS server in Dallas. The RAS server will perform the validation and pass the caller off to the application server where App Manager will create their toolbar, based on their User ID.

The Network Password and Network ID combination will change also, because we are not using the Network Management System. The application User ID will serve as the customer's Network ID. They will receive a new, case-sensitive Network Password. Therefore, during installation, the customer will enter their User ID and the Network password provided by the application coordinator. After installation, the customer will

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not enter their network password on any future log-ins. Their application User ID and password will be all they will need.

Support Concerns

An overriding concern was expressed that it is difficult to estimate the complexities associated with this type of communication between customer's system and Southwestern Bell system. We may have compatibility issues with modems, TCP/IP stacks, the customer's software that is loaded onto their local PC, the hardware that the customer is running on, with the Network LAN configurations of the customer's company, etc. CNA has had experience with all of these issues and they have found that nearly every customer is walked-through the connectivity issues specific to their situation. Very few customers can set up the software and connection without a conversation with a Southwestern Bell employee. This needs to be factored into future Helpdesk conversations regarding Positive ID.

Encryption

There is a need for encryption between the customer's PC and our application server. We decided to provide encryption WITHOUT public/private keys. We will hard-code into the software diskette a random string that will turn data into gibberish when sent across the public network. The application server will know the same random string and will decrypt the information. This is accomplished quite easily with an RSA application.

Application Server

We are going to share server space with CNA. CNA ordered a new SUN server (Sparc 2000) and Positive ID contributed \$40,000 to secure additional memory on that machine.

Since both the Application Server and SMS reside within the Southwestern Bell WAN, the communications between the two will be via Datagate API to ensure proper security.

Availability

The system will generally be available on a 7 x 24 hour basis. However, it should be noted in customer documentation that system maintenance will be performed in the off-hours and may delay system response time or prohibit access for a brief period of time.

Support in the form of a Helpdesk will only be available from 7 a.m. to 5 p.m. on weekdays.

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Testing

Usability Tests for Positive ID

Preliminary usability tests were performed in Austin by Chuck Green, Human Factors - TRI in November. More formal tests took place on January 23rd with Tracy Brokaw, Peggy Blanner and Chuck and five members of the user community in Austin. The clients ran through the prototype and commented on its functionality. Results of the study are available upon request. No substantial problems or bugs were uncovered and it appears that the software is usable and friendly. Some long-term changes will be documented for incorporation into a later release of the software.

The Application Manager software was not tested by TRI, and consequently, has not been blessed by TRI Human Factors as being usable and friendly. Future testing and enhancements are being coordinated.

The Numbers

The Helpdesk number for the PC Interface for Positive ID is 1-800-274-8919, which terminates locally to (314) 235-9282. The dial-in number for access to our application server is 1-800-286-5169 and terminates locally to (314) 340-1000 (through 1032).

Helpdesk

Positive ID has a variety of situations that require some sort of Helpdesk.

- Establishment of user IDs on the Application Server. This will be handled by the Application Coordinator in IS. {1-800-274-8919.}
- Answer PC-specific questions associated with the software and the communications. Questions such as (1) inability to appropriately load the software associated with the PC Interface, (2) terminal emulation concerns in accessing Southwestern Bell's server, (3) PC configuration concerns, (4) Subscriber platform concerns, (5) Southwestern Bell server and/or dial-up access concerns. This will be handled by the Application Coordinator in IS. {1-800-274-8919.}
- Answer AIN and call processing questions. We need an individual who can field questions about AIN triggers and switch functionality. Questions such as why is a number on the screening list not able to complete a call without entering an Access Code? (Could be because no CPN was delivered on the call because of a non SS7 end office.) This call should go to the local Repair bureau.

The AIN Helpdesk, which should be in place in 1996 will answer 'how-to' questions from a philosophical level. They will not assist customers with trouble-shooting exercises but they will explain concepts to customers. Their presence should assist Repair in that 'conceptual' questions are the most time-consuming calls to the repair bureau.

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Service Evolution

Remote Access Server (RAS)

Security would like for all future applications to use the Remote Access Server (RAS) for access into Southwestern Bell applications. It is a more secure method of communication. When RAS is operational for external customers, we will migrate the existing Positive ID customers to the new communications method. This is currently scheduled for 8/1/96.

Two-way communication

Two-way communication is the ultimate goal for this interface, so that when a customer logs onto our server from their PC, their Active view is pulled from the ISCP instead of from a saved version in SMS. This will ensure that any DTMF updates are reflected in the PC file, which today they are not.

An additional concern with two-way communication will be the comments fields associated with the authorized number table and the access code table. Research will need to be done to determine how we can maintain the comments fields.

Incorporation of other AIN services

In mid to late 1997, Intelligent Redirect, Disaster Routing Service, Area Wide Networking and Texan will all require a PC User Interface for their customers. At that time, Positive ID will be redesigned and all of the AIN services will be managed in a similar fashion. We will probably migrate Positive ID logic to an independent application server that will be used by all AIN services and we will have one helpdesk and a common look and feel, etc. This project is named "Customer Change Vehicle" and may even combine the efforts of this interface and the AIN Sales Tool.

Call Processing Reports

One possible evolution is that the call processing reports that are produced for Positive ID from the DRS system, the 'Successful Attempts Log' and the 'Unsuccessful Attempts Log' be delivered to the user through the PC, rather than through the mail. This would be extremely efficient and cost effective.

NPA Splits

As future NPA splits occur, some communication will need to take place with the Application server such that accounts can be changed to the new NPA on the appropriate date. This is a concern and will impact the Dallas and Houston splits that are scheduled for 1996.

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Attachment 1 Customer Contact Form

CUSTOMER NAME HERE,

Thank you for selecting Positive ID service from Southwestern Bell. You will be pleased with the control over your phone line that this service provides. Positive ID service is a line of defense that will help protect your phone line against fraudulent callers and will help you maintain confidentiality and privacy of your communications.

The following information is needed to easily and quickly access Southwestern Bell in order to establish and modify your Authorized Telephone Numbers and Access Codes. For your protection, the software was provided under separate cover.

Positive ID was ordered for COMPANY NAME HERE
to restrict access to the number (XXX) XXX-XXXX.

You requested TWO User ID(s), assigned as USERID1 and USERID2.
As requested, you are authorized to install this software on TWO machine(s) at your company.
Additional installations of this software is a violation of the license agreement.

The Network ID that is assigned to COMPANY NAME HERE
is: XXXXXXXXXXXX . The Network Password is: XXXXXXXXXXXX.
(Please note this information is case sensitive. So please input the ID and password as it is displayed above).

This information will be required when you install the software. It is specific to your company or division.

Southwestern Bell recommends the following modem string:
AT&F&C1

The dial-in access number is 1-800-286-5169.

Again, thank you for your purchase of Positive ID. We're here to support you with prompt expert service. Please call 1-800-274-8919 for software installation assistance.

Sincerely,

Southwestern Bell Positive ID
Application Support Coordinator

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