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IWS

Billing Application User's Guide

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NORTEL NETWORKS™

DMS-100 Family

IWS

Billing Application User's Guide

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1.0 Introduction

The IWS Billing application, previously Nortel Networks Operator Assistance (NTOA and NTOA Plus), provides toll and assistance capabilities for the operator. It also gives the service provider a means of specifying whether an Intelligent Service Node Provisioning System (IPS) database or an enhanced calling card database (CCDB) is connected to the network. This document describes the human machine interface (HMI) of the IWS Billing application and the functionality it provides the operator.

Features specific to the international (Global Operator Services, or GOS) market are noted as GOS features throughout this document.

1.1 Overview

The IWS Billing application provides an interface between the DMS switch, the operator, and the database. This interface relays information to the operator through a series of windows:

- Call Information
- Call Details/Database Info
- Violated Restrictions
- Scripting Utility
- Booked Call (GOS environment)
- Estimated Call Charges
- Message/Status

These windows are discussed in detail in subsequent chapters of this document. The IWS Billing application supports the Queue Management System (QMS).

The Billing & Access Services Intelligent Services Node (ISN) maintains configuration tables that determine the specific service and service options to offer for incoming calls such as branding and 0- and 0+ automation. These tables are provisioned and maintained in the IPS database.

A service provider can create a custom program of services such as sequence dialing and billing restrictions for subscribers, as well as branding options such as initial and terminating announcements to callers, and initial greetings to the billed party during billing acceptance, for resellers.

In addition to connecting to the IPS database, the IWS Billing application can be configured to connect to an enhanced calling card database (CCDB). This database maintains enhanced calling card holder profiles that give the operator information about the subscriber. To access information in the enhanced CCDB, the operator presses the appropriate database softkey displayed at the bottom of the screen. The billing application includes enhanced calling card features such as

- account codes

- voice mail message-waiting indication
- speed dial access
- calling restrictions
- automatic custom automatic message accounting (AMA) information appended to AMA records
- access to a variety of other services

1.2 The IWS Billing application in TOPS IWS

The IWS Billing application is one component of the open Traffic Operator Position System Intelligent Workstation Subsystem (TOPS IWS). Figure 1 provides an overview of the TOPS IWS network topology with the IWS Billing application and with various databases connected. Figure 2, “TOPS IWS software architecture,” on page 19, provides an overview of the TOPS IWS software architecture.

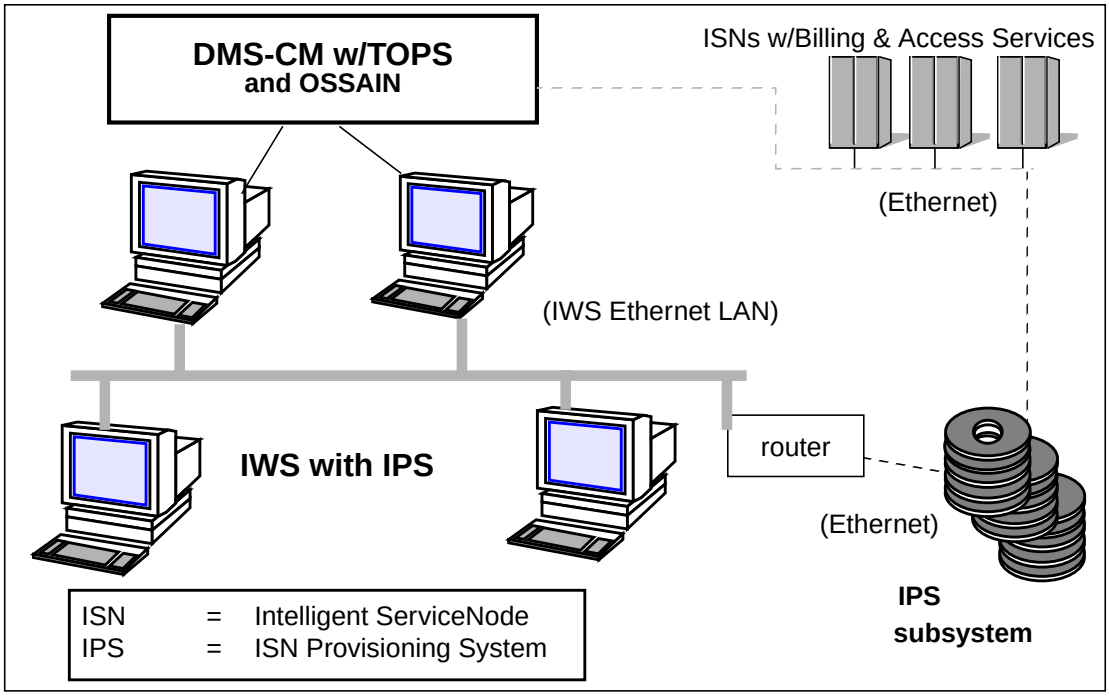


FIGURE 1. IWS network topology

As of IWS Release 17.1, two types of IWS position configurations are supported, TDM positions and IP positions. For more information on IWS position configuration, see the *TOPS IWS Base Platform User’s Guide*, 297-2251-010.

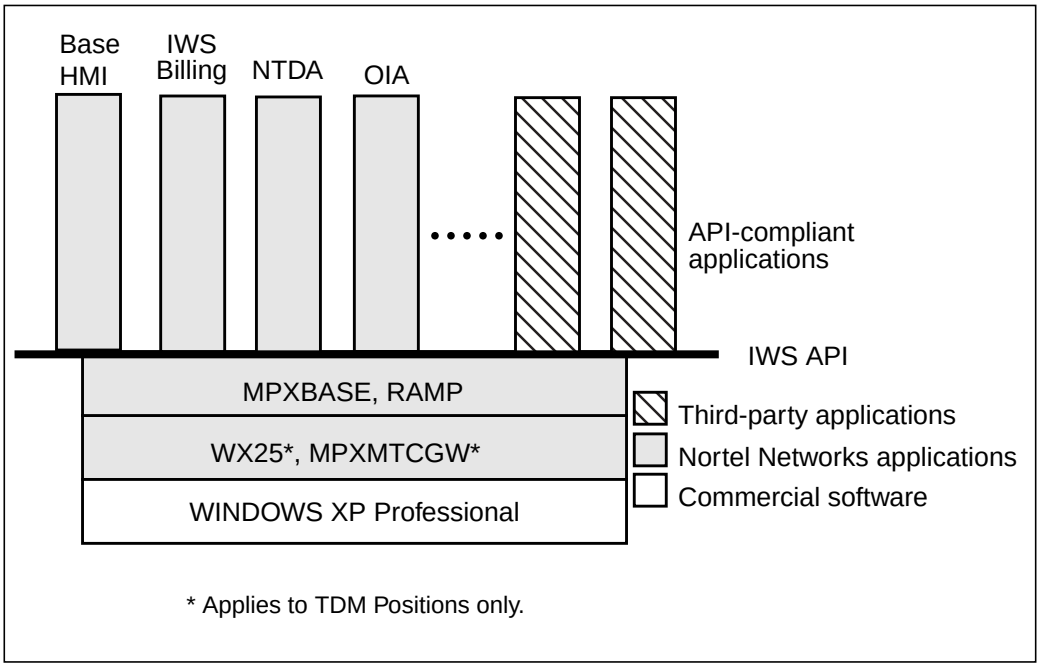


FIGURE 2. TOPS IWS software architecture

Note: The WX25 and MPXMTCGW applications apply to TDM Gateway positions only.

The IWS Billing application does not function without the base software identified in Figure 2. It interfaces with TOPS IWS through an application programmer's interface called the IWS API. For the IWS API definition and a complete discussion of the IWS base software, refer to *TOPS IWS Base Platform User's Guide,* 297-2251-010.

Through the API, the IWS Billing application receives the information to display on the screen for the operator. This information originates in the DMS switch and is passed to the Billing application from the IWS base software through the IWS API. The IWS Billing application also communicates operator input through the IWS API to TOPS IWS and ultimately to the DMS switch.

1.3 Billing for IWS applications

All applications that provide DMS switch services can use the IWS Billing application.

Note: To select IWS Billing as the billing application, the Billing Application Tag field in file XSERVS.TBL must contain the application tag NTOA. Refer to *section 13.3.11 on page 124* for information on the NTOA billing tag, and to *TOPS IWS Base Platform User's Guide,* 297-2251-010, for a description of file XSERVS.TBL.

The IWS Billing application provides a context change key between itself and the position's current service application for which it is providing billing functionality. While the operator is handling another service call type (a DMS switch service other than toll and assistance), the operator can perform billing actions by changing the position context

from the application service screen to the IWS Billing application screen. This is done through defined context change keys provided by the service application.

The IWS Billing application also provides a defined softkey set for all DMS switch call types defined in *TOPS IWS RAMP and Provisioning User's Guide,* 297-2251-015. If the Billing application screen is displayed while the operator is handling another service call type (for example, a directory assistance call), IWS Billing displays the defined softkey set for handling the billing for the present call. The defined IWS Billing application softkey set and the ability to define context change keys are discussed in both "Call information area softkeys" on page 51 and *TOPS IWS Base Platform User's Guide*, 297-2251-010.

2.0 IWS Billing application displays

The IWS Billing application displays information from the DMS switch, the Intelligent Service Node Provisioning System (IPS) database, and the enhanced calling card database (CCDB) for the operator in four general areas:

- Area 1 displays call headlines.
- Area 2 displays call information.
- Area 3 displays violated restrictions, memo, booked call (Global Operator Services [GOS] environment), service provider information, and estimated call charges.
- Area 4 displays call details, database information, and the scripting utility.

Figure 3 shows the placement of these four areas on the workstation screen.

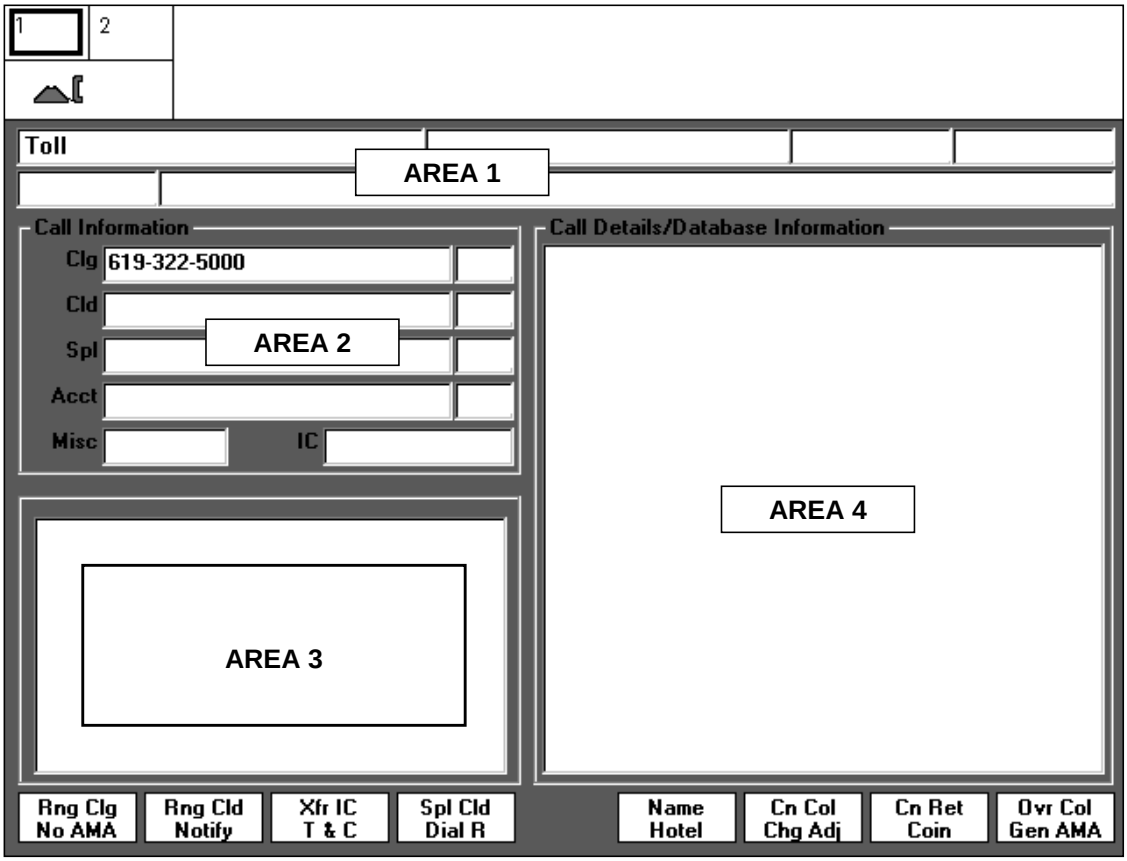


FIGURE 3. IWS Billing application areas

Note: The IWS Billing Application supports both 640 x 480 and 800 x 600 screen resolution.

2.1 Area 1: call headlines

The call headlines area contains fields for call information such as service provider ID (SPID) and trunk group.

For a more detailed discussion of the call headlines area, see chapter 3.0, “Area 1: call headlines” in this document.

2.2 Area 2: call information

The call information area provides fields for displaying information about a call. When a call arrives at the position, some information may be displayed with it. The operator can then prompt the caller for any additional information needed to access whatever service the customer requests. For example, if the caller is trying to complete a calling card call, the operator needs the calling number, the called number, and the calling card number and personal identification number (PIN).

For a more detailed discussion of the call information area, see the chapter 4.0, “Area 2: call information” in this document.

2.2.1 Call processing fields

The call processing fields of area 2 display information about calling, called, and special numbers; hotel room numbers and authorization codes; and inter-LATA carriers. If the information is not available at call arrival, the operator can enter the necessary data in these fields.

The IWS Billing application provides enhanced calling card services by connecting to an external database. Sometimes call processing involves the display or entry of account codes in addition to enhanced calling card numbers and PINs.

2.2.2 Icon fields

At call arrival or after operator action, icons display to indicate whether the information is valid or how the call is to be billed.

2.2.3 Softkeys

In addition to the data entry in the call processing area, the operator can interact with the IWS Billing application using the softkeys displayed at the bottom of the workstation screen. The 16 softkeys that display at call arrival provide toll and assist options. The operator can access a softkey set from the IWS Billing application to book a call.

The operator can change the display to the softkeys that access the calling card database by pressing the **DB** key.

2.3 Area 3: violated restrictions, internal booked call (GOS environment), estimated call charges, and memo (GOS environment)

2.3.1 Violated restrictions

For an ECC call with valid calling and called numbers, the IWS Billing application queries the CCDB for any violated restrictions associated with the call, and displays them to the operator automatically in area 3.

For further information on violated restrictions, refer to the chapter “Area 3” on page 57 in this document.

2.3.2 Internal booked call (GOS environment)

In the GOS environment, the internal booked call database handles operator assisted calls that cannot be processed immediately because of lack of resources or inability to reach the called party. The database is used to store the call details of a call for a later attempt at processing.

Further information on the internal booked call database can be found in the “Area 3” on page 57 in this document.

2.3.3 Estimated call charges

The TOPS estimated call charges feature gives the operator the ability to estimate the cost of completing a call. The operator enters or modifies the call data needed to calculate the charges for the call and selects Calculate Est Chg from the functions menu. The estimated call charges are calculated at the DMS switch and sent to the IWS position. The operator then quotes the estimate to the subscriber.

Further information on estimated call charges can be found in the chapter “Area 3” on page 57 in this document.

2.3.4 Service provider information

The IWS Billing application can be configured to connect to the IPS database. The Billing & Access Services Intelligent Service Node (ISN) maintains configuration tables that determine the specific service and service options to offer for incoming calls. These tables are provisioned and maintained in the IPS database.

A service provider can create a custom program of services such as sequence dialing and billing restrictions for card holders, as well as options such as greeting and terminating brands for resellers. These restrictions and branding text display in area 3.

Further information on the IPS database and service provider displays can be found in the chapter “Area 3” on page 57 in this document.

2.3.5 Memo (GOS environment)

The memo window contains memo text associated with the current call.

Further information on the memo window can be found in the chapter “Area 3” on page 57 in this document.

2.4 Area 4: call details/database information

2.4.1 Call details

The call details fields provide display of billing and other information necessary to complete a service provided by the IWS Billing application. Space for call details is shared with the database window. The operator can press the **Fncts** key to access the functions menu and invoke the call details function to move between the call details and database information.

The call details fields are discussed in the chapter “Area 4: call details” on page 79 in this document. The functions menu is discussed in *TOPS IWS Base HMI Application Guide,* 297-2251-013.

2.4.2 Database information

The database display window provides lists from the CCDB of the various features (such as valid services, speed dial numbers, and restrictions) enabled for each enhanced calling card and PIN. The operator accesses the database window by pressing the **DB** key on the keyboard, which changes the softkey display from the toll softkey set to the database softkey set. Next the operator presses the softkey to access the desired information.

The information displayed in the database info window is discussed in more detail in the chapter “Area 4: call details” on page 79 in this document.

2.5 MSA

The message/status area, at the top of the screen in Figure 3 on page 21, displays system and service information to the operator, in addition to various icons and error messages.

The MSA is discussed in the chapter “Message/status area” on page 99 in this document. For a detailed discussion of the MSA, refer to *TOPS IWS Base HMI Application Guide,* 297-2251-013.

3.0 Area 1: call headlines

The call headlines area at the top of the screen displays six fields of information about a call. Figure 4 shows this area with the six fields numbered.

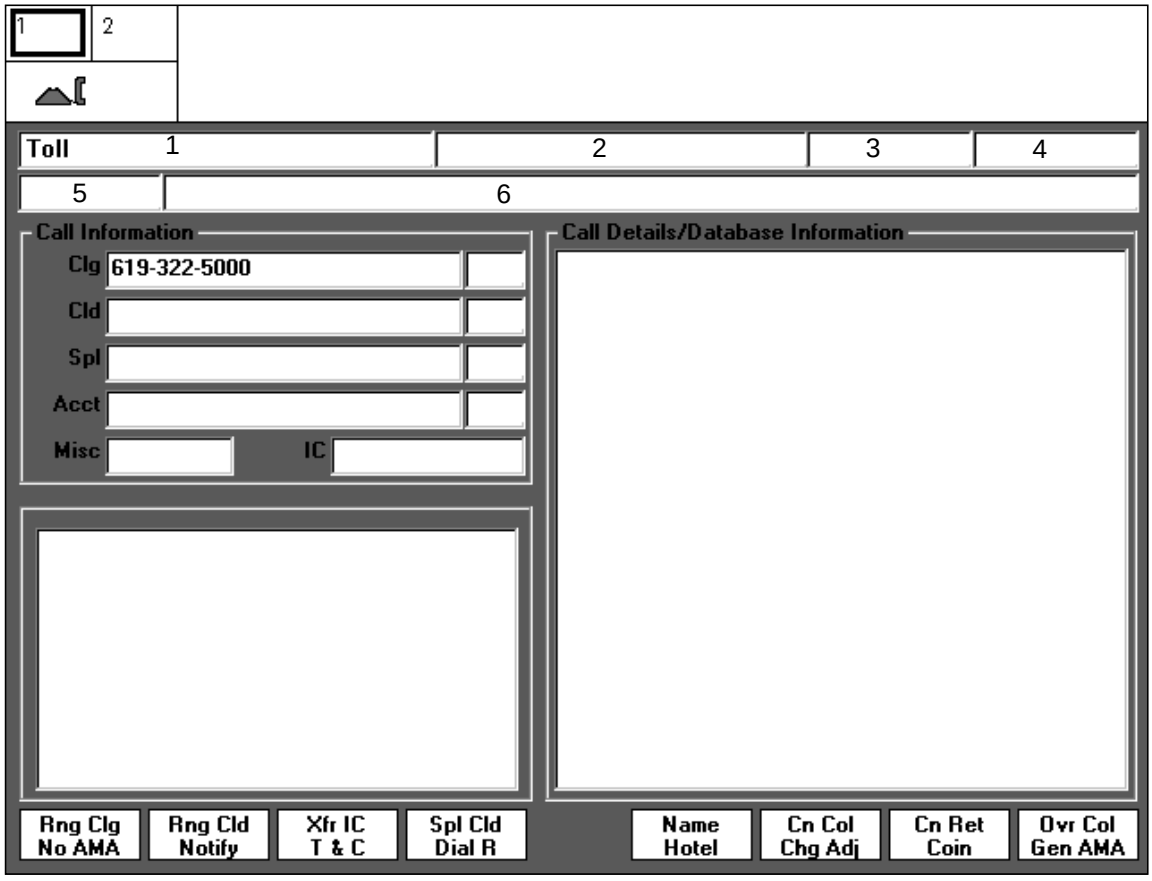


FIGURE 4. Call headlines area

3.1 Service/type: field 1

Field 1 displays the service type and either the call type, call arrival status, or reason for agent information for the call.

For service type, the text can be up to six characters, supplied through datafill in file XSERVS.TBL.

Call type text can be up to ten characters, supplied through datafill in file XCLLORIG.TBL.

Call arrival status text can be up to ten characters, supplied through datafill in file XCASTS.TBL.

The reason for agent information text (following) can be up to eight characters, supplied through datafill in file PCCCINFO.LNG.

Each of the following text strings shows the operator information from the DMS switch. If a question mark (?) is appended to a string, the call is of dubious origination status.

Recall **string ID 0000**
The maximum length of this label is four characters.

Notify **string ID 0001**
A nonstandard notify time has expired, and it is time to notify the caller. If the call cannot be accessed until after the notify time, a plus sign (+) is appended to the string.

Overtime **string ID 0002**
The operator must collect charges for the last period of conversation in a coin sent paid call.

DA-Rcl **string ID 0003**
A directory assistance call returns to the operator.

T&C **string ID 0004**
A call that was set up for time and charge information has ended.

Hold **string ID 0009**
A call placed on permanent hold is accessed again by the operator.

For descriptions of files XSERVS.TBL, XCLLORIG.TBL, and XCASTS.TBL, refer to *TOPS IWS Base Platform User's Guide*, 297-2251-010. For a description of file PCCCINFO.LNG, refer to chapter "Data schema" in this document.

3.2 Calling station class information: field 2

Field 2 displays calling station class and restricted billing text. The calling station class information text can be up to eight characters. The strings are in file PCCCINFO.LNG, described in the chapter "Data schema" in this document.

Coin Pre **string ID 0005**
The calling station class of the call is prepay coin.

Coin Po **string ID 0006**
The calling station class of the call is postpay coin.

Hotel **string ID 0007**
The calling station class of the call is hotel.

Inst **string ID 0008**
The calling station class of the call is institution.

Restricted billing text of up to eight characters can be appended to any of the above strings. The text is supplied through datafill in file XRBLG.TBL, which is described in *TOPS IWS Base Platform User's Guide*, 297-2251-010.

Restricted billing text for originating line number screening (OLNS) calls takes precedence over calling station class information; therefore, if both are available, only the

OLNS equipment displays. The text is supplied through datafill in file XOLNSEQP.TBL, which is described in the *TOPS IWS Base Platform User's Guide*, 297-2251-010.

3.3 Call type for queueing (CT4Q): field 3

The CT4Q text can be up to nine characters and is supplied through datafill in file XCT4Q.TBL. For a description of file XCT4Q.TBL, refer to the *TOPS IWS Base Platform User's Guide*, 297-2251-010.

3.4 Called station class information: field 4

Field 4 displays a label (up to nine characters) that identifies whether the call is from a coin or hotel phone, and indicates that the call has been billed collect.

To: Coin **string ID 0010**
The called station class of the call is coin.

To: Hotel **string ID 0011**
The called station class of the call is hotel.

3.5 Trunk group/SPID priority 1: field 5

Field 5 displays call information, including incoming trunk group name and service provider identification (SPID). Field 5 can display a maximum of eight characters. The SPID display information is from the DMS switch, and the trunk group information is from file XTGDSPL.TBL, which is discussed in *TOPS IWS Base Platform User's Guide*, 297-2251-010.

To send both displays to the position, parameter DisplayBoth in IWS file MPXPARM.INI and parameter OPP_ALWAYS_SEND_SPID_INFO in DMS table TOPSPARM must be turned on. Using the provisioning tool, select File, New, MPXPARM, and Trunk Group/SPID. Check the box in the popup window to "Display both Trunk Group and SPID."

If both the SPID and the trunk group are sent to the IWS position, the display in the call headlines window appears based on the priority datafilled in file MPXPARM.INI. Select either trunk group or SPID in the popup window mentioned in the preceding paragraph. The lower-priority piece of information displays in the call details area. (See section 8.1.15 on page 85.)

The provisioning tool is discussed in *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

3.6 Text-to-operator: field 6

Field 6 displays text-to-operator information that arrives at the position from the DMS switch by way of the Intelligent Service Node (ISN) in the Operator Services System Advanced Intelligent Network (OSSAIN) environment. On some occasions (only in the GOS environment), information displays from the ServiceBuilder intelligent node (IN).

The actual text, and the circumstance prompting its display, are determined entirely by the automated ServiceNode platform, and displayed by the IWS when operator backup is provided for the call.

The example below shows one possible text display that can be sent from the ISN Billing & Access Services application. The example contains three pieces of information:

- current call state
  - <0+> billing information needed from caller
  - <0+CLD> collect call, but party not connected
  - <CLDCON> collect call, party connected
  - <0+3RD> third number billing, billed party not connected
  - <3RDCON> third number billing, billed party connected
- operator handoff indicator, indicating whether handoff to AABS is or is not allowed. (Text in this portion may be datafilled by service provider.)
  - <OH+> handoff allowed default
  - <OH-> handoff not allowed default
- reason to transfer to operator
  - <hookflash> caller requested operator by hookflash
  - <NR Failed> name record failed
  - <NO OH> do not hand off to AABS

Thus a message about a call with the called party connected, handoff allowed, and a calling party hookflash would display as a concatenation of up to 20 ASCII characters, as shown in Figure 5.

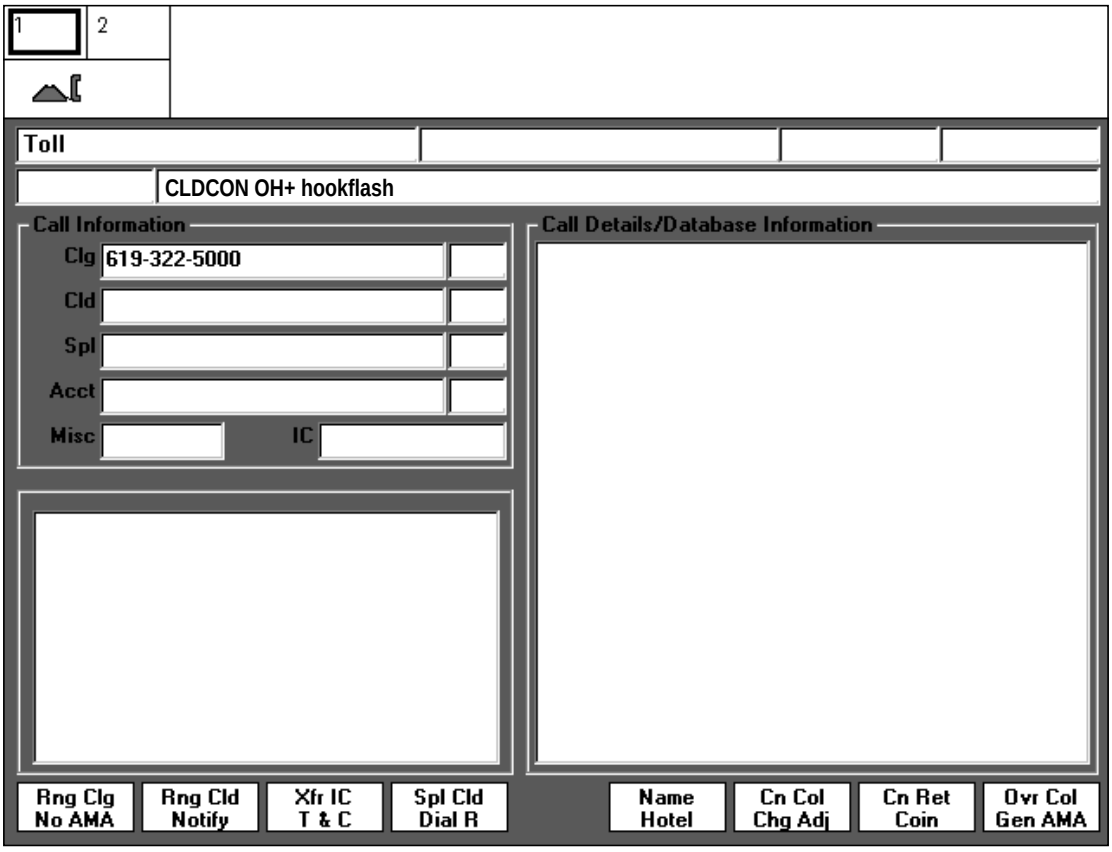


FIGURE 5. Sample text-to-operator display

4.0 Area 2: call information

The call information area (area 2) displays data about a call. The fields display information such as directory numbers, calling card numbers, and hotel room numbers. Figure 6 shows the call processing fields of the call information area in the IWS Billing application screens.

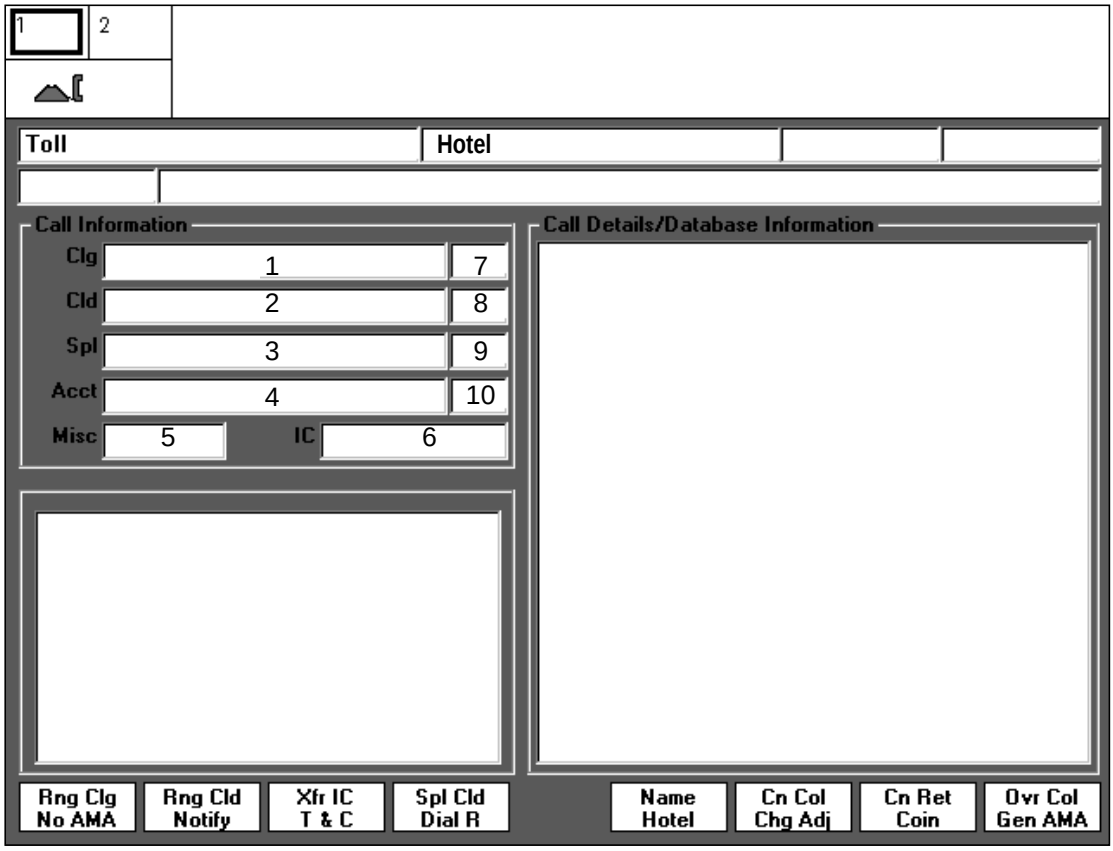


FIGURE 6. Call information area

In the discussion that follows, each field of the call information area is discussed in terms of the text that may be displayed in it. String IDs identify the text strings that are displayed as field labels and informational messages in each field. Both the identifying label and the text string for each field can be changed in the associated language file. Note that string lengths (where variable width pitched fonts are used) are determined based on average "X" width character sizes.

Unless noted otherwise, text displays in the following field descriptions appear in IWS normal text color. Generally, the IWS error text color indicates an error condition, and the IWS alert text color indicates an alert condition. In IWS non-colorblind mode, the error text color is red, and the alert text color is magenta. In IWS colorblind mode, the error and alert colors are the text colors defined in IWS datafill file, MPXPARM.INI. The default colorblind error and alert text colors are light-medium grey. As with other IWS datafill, a craftsperson may change the colorblind text colors.

The error text and alert text flash in the Clg, Cld, SplCC, Acct, IC, and Misc data entry fields when the colorblind mode is activated. Error text flashes at a fast rate, and alert text flashes at a slow rate.

Text flashing is available in the non-colorblind mode. The user can enable text flashing independently of the colorblind mode by modifying IWS datafill. For more information about IWS colorblind support and text flashing, see the *TOPS IWS Base HMI Application Guide*, 297-2251-013, *TOPS IWS Base Platform User's Guide*, 297-2251-010, and *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

Some call information fields have a corresponding field label. Text strings for these field labels may be found in file PCCCINFO.LNG, which is detailed in section 13.2.1 on page 116 in this document.

4.1 Clg: field 1

Field 1 displays calling data. The calling number displays here except in case of Automatic Number Identification (ANI) failure or Operator Number Identification (ONI) failure. In such a case, the operator enters the directory number (DN) of up to 17 unformatted digits and presses the **Start** key to send the digits to the DMS switch. The DMS switch validates the digits and returns them (up to 21 characters, including up to four separators). The operator can edit a calling number that has been stored in the DMS switch. See section 4.11.1 on page 45 for further discussion.

An invalid calling number displays unformatted, with separators, in error text color. If the number is missing and invalid, a "**?**" appears in the alert text color. If the call is connected but the calling party is on-hook, the field inverts (turns grey).

A combination of an appended "**X**" and the numbering plan area (NPA) and exchange (Nxx), and sometimes the line number, indicates ANI failure. An "**X**" displays in the normal text color if no digits are available.

A combination of an appended "**?**" and the NPA and Nxx in normal text color indicates an ONI call. If no digits are available for display, a "**?**" is shown in normal text color.

If Caller ID Blocking is enabled, "X" characters replace formatted digits.

4.2 Cld: field 2

The called field displays called data. If the called number does not appear at call arrival, the operator enters a DN, an enhanced calling card speed dial number, or an enhanced calling card service number (up to 17 digits). These digits do not need to be formatted, but the operator must precede the speed dial number with a "d" and the service number with an "s." Note that these prefixes are case-sensitive and are datafilled in file PCCCINFO.LNG, which is detailed in chapter "Data schema" in this document. Speed dial and service numbers are also available.

The operator can edit a called number that has been stored in the DMS switch. See section 4.11.1 on page 45 for further discussion.

4.2.1 Speed dial

An enhanced calling card holder who has speed dial enabled can use one or two digits to signal the operator to access 1-99 saved directory numbers. Speed dial numbers can be personal or corporate. Personal speed dial lists contain up to 9, one-digit codes, and corporate speed dial lists contain up to 90, two-digit codes. The card holder with a corporate list can choose to have a personal list.

The operator can view the speed dial list in the enhanced calling card database (CCDB) and provide assistance, for example, if the caller has forgotten the associations between the speed dial numbers and the directory numbers. Figure 7 is an example of a speed dial list for a card holder. The operator can scroll this list with the page forward and page backward keys. Both domestic and foreign numbers can be datafilled in the CCDB for a particular card.

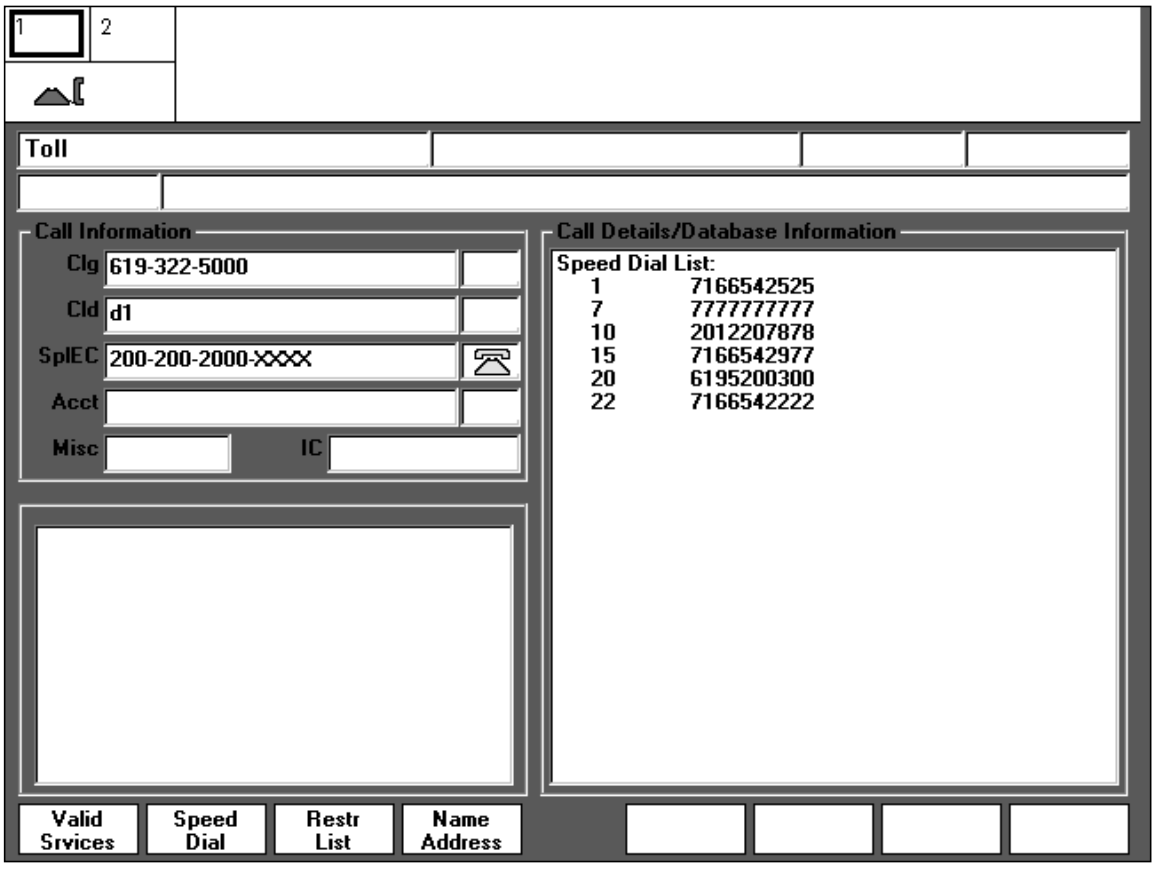


FIGURE 7. Speed dial list

4.2.2 Valid services

The IWS Billing application provides the enhanced calling card holder with services such as access to car rental agencies, hotel and airline reservations, and travel agencies. Each enhanced calling card number and PIN have a specific list of services enabled, and the operator can see that list in the call details/database info window (Figure 8).

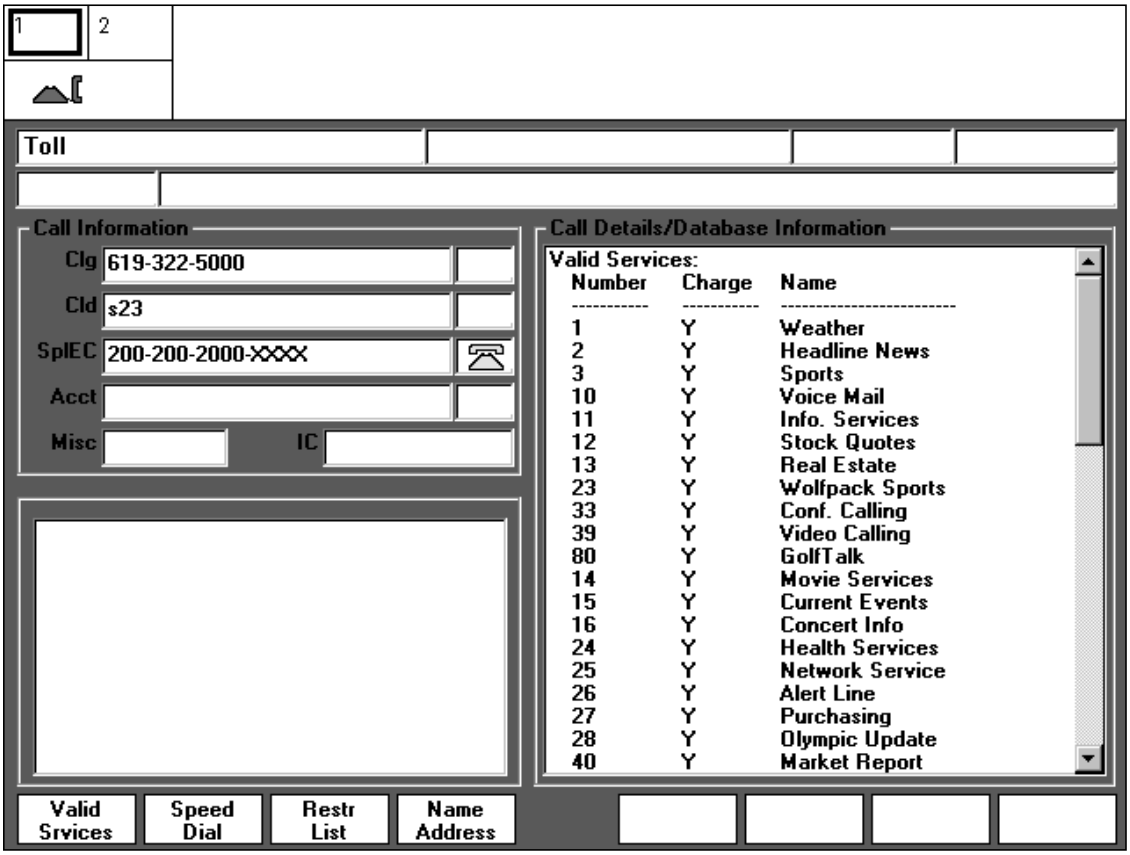


FIGURE 8. Valid services

4.2.3 Restrictions

The CCDB supplies a variety of restrictions that can be placed against an enhanced calling card and the associated PIN. Any of these restrictions can be datafilled to apply in various combinations to a calling card or PIN. Following are examples of restrictions available:

- country: Country codes can be blocked or enabled with information provided by the CCDB.
- completion number: Completion to some numbers can be blocked or enabled with information provided by the CCDB. For example, the restrictions can be structured so that all calls beginning with “1” are blocked, and all calls beginning with “1-2” are enabled.
- calling/called pairs: Specific calling/called pairs can be blocked or enabled with information provided by the CCDB.

- time interval: Specific time intervals can be blocked or enabled with information provided by the CCDB.
- call volume: The maximum number of calls in a day, week, or month can be restricted with information provided by the CCDB.
- service: Services for a particular card and PIN are shown on the screen; any services not allowed are not shown to the operator and are restricted with information provided by the CCDB. In addition to restrictions such as those shown in Figure 9, tables in the DMS switch can be datafilled to block calls based on the calling or called directory number; these restrictions have priority over calling card restrictions.

If the position has received the calling card number, PIN, and called number, the IWS Billing application queries the CCDB for specific restrictions when a call arrives with a violation. Normally, an operator does not have the authority to override a restriction and release the call. The operator can see these restrictions in the violated restrictions window and can pass the call to a supervisor or to an operator with datafilled monitor capability who has the authority to override them. Figure 9 is an example of restrictions associated with a card holder's calling card number and PIN, and the restrictions that would be violated based on the calling card number, PIN, and called number.

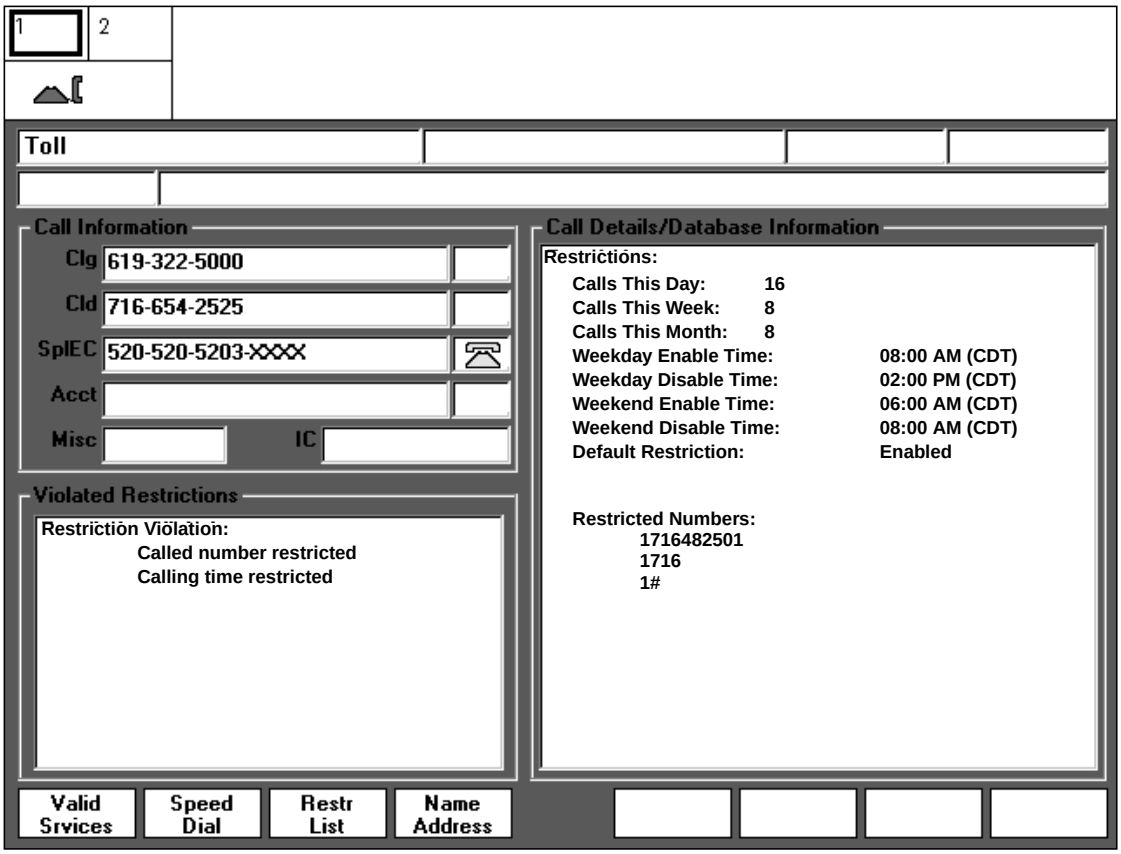


FIGURE 9. Restrictions

If parameter DirNum Connect in table NTOAINI.INI is not selected (using the provisioning tool) when the operator presses the **Start** key, the digits are sent to the DMS

switch with the No-Connect option. The DMS switch validates the digits and returns them, formatted (up to 21 characters, including up to four separators), but does not attempt to connect the call. The prefix and number may or may not be cleared from the field. If DirNum Connect is selected (using the provisioning tool) when the operator presses the **Start** key, then the digits are sent to the DMS switch with the connect option, so the switch validates them and tries to connect the call. For information on datafilling DirNumConnect, see *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

If any screening restrictions apply to the number, or if the DN database query fails, the digits appear in the alert text color. If the DN is missing, a "**?**" displays in the alert text color. Invalid digits are displayed in the error text color. If the DMS switch does not return the number, a "**?**" displays in the error text color. If the call is connected but the called party is on-hook, the field inverts.

A **string ID 0014**

A DN followed by "A" indicates the number has been outpulsed and an alternate service number exists.

N **string ID 0015**

A DN followed by "N" indicates the number has **not** been outpulsed and an alternate service number exists.

4.3 Spl: field 3

The special field displays enhanced calling card numbers, line information database (LIDB) billing numbers, and third party billing numbers.

The label (a maximum of five characters) for the field changes depending on the type of billing number entered. The labels are provided in file PCCCINFO.LNG, which can be datafilled with the provisioning tool.

Spl **string ID 0018**

This is the default label for the special field.

SplEC **string ID 0042**

This label displays when a valid enhanced calling card (ECC) number is in the special field.

Spl3d **string ID 0019**

This label displays when a valid third-party billing number is in the special field.

SplCC **string ID 0041**

This label displays when a valid LIDB calling card number is in the special field.

The **Thr/CC** key turns validation of an enhanced calling card by the CCDB on or off. A message in the MSA indicates whether the number will be sent to the CCDB for validation. The message strings are provided in file PCCCINFO.LNG and can be datafilled with the provisioning tool. Each string can be a maximum of 24 characters.

CCDB Card Validation Enabled string ID 0044

This message displays when the **Thr/CC** key is pressed. The number currently in the special field is sent to the CCDB and, if not found there, to the DMS switch.

CCDB Card Validation Disabled string ID 0043

This message displays if CCDB validation is enabled and the **Thr/CC** key is pressed. CCDB validation is suspended for the number currently in the special field, and the number is sent only to the DMS switch.

At call arrival, CCDB validation of an enhanced calling card number is enabled by default. Thus a **Thr/CC** keypress does not toggle between enabling and disabling CCDB card validation.

If the digits of an enhanced calling card correspond to the calling or called number and are entered in the appropriate field, then the operator can enter just the associated PIN in the special field. The IWS Billing application combines the ECC number with the PIN and sends them for validation. This capability allows a caller whose ECC number is the same as his home telephone number to call home from another site, and enables the operator to key the PIN in the special field and receive a valid billing number. The length of ECC PINs can vary, and they can be datafilled in file NTOAINI.INI with the provisioning tool. For the IWS Billing application to append the PIN in the special field to the ECC number, DMS table TOPSPARM must be datafilled to send the called number to the IWS position. See Figure 10 for an example of just the PIN, and Figure 11 for an example of the PIN appended to the called number to create the ECC number, in the special field.

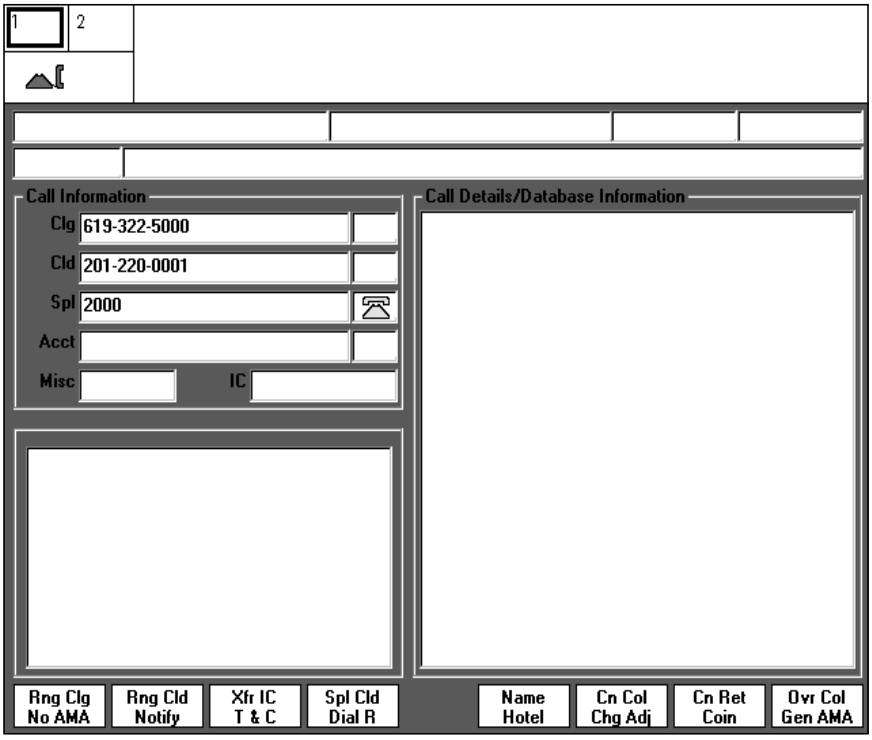


FIGURE 10. PIN entered in special field

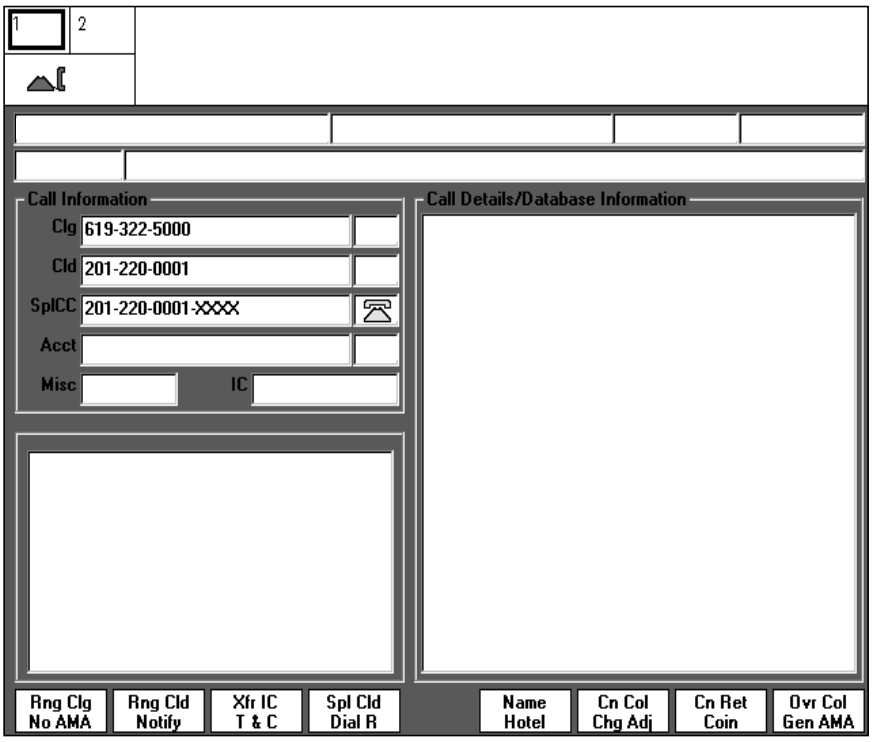


FIGURE 11. PIN appended to called number in special field

Enhanced calling card PINs are masked by replacing each digit of the PIN with an “X”; switch-based PINs may be masked. The information on masking for switch-based PINs comes from the DMS switch.

If the digits are valid, they are returned formatted. Up to 27 characters, including up to four separators, are available for display. The operator can edit a special number that has been confirmed by the DMS switch. See section 4.11.2 on page 46 for further discussion.

Foreign calling card numbers are displayed unformatted, in either normal or error text color (as appropriate).

4.3.1 Handling IN fallback calls from ServiceBuilder

In the GOS environment, information can be routed to the operator by way of an intelligent node (IN). In such a case, the calling card number and PIN entered by the subscriber display in alert text color if they are valid. The actual PIN does not display; instead, it is denoted by a “?” for every digit given by the subscriber. If the card number or the PIN (or both) is invalid, it displays in error text color. Figure 12 shows how area 2 looks when information about an IN fallback call displays.

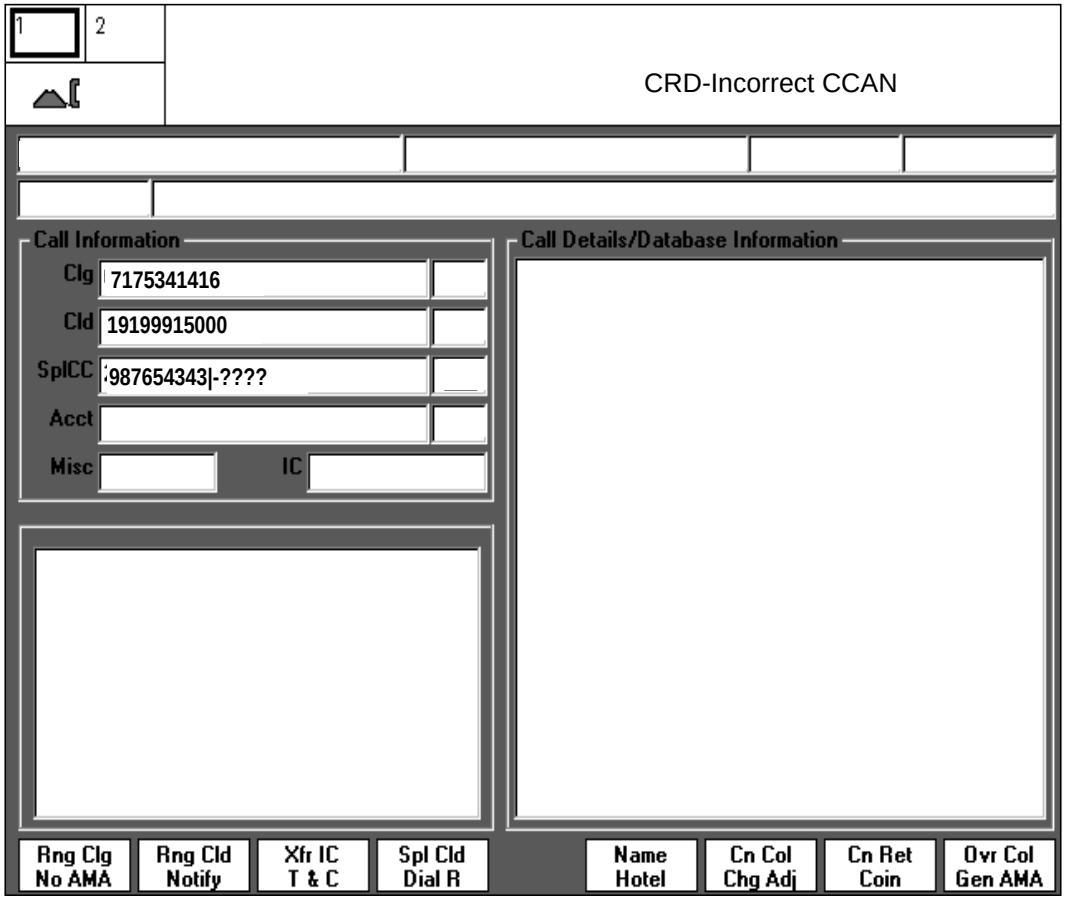


FIGURE 12. IN fallback call information

The operator can edit the entry in the special field with the left and right arrow keys and the **Home** and **Backspace** keys. If the PIN is incorrect, the operator just starts typing and the dash and existing PIN disappear. The editing keys are used to position the cursor and correct the calling card number. When the operator starts editing, the digits' color changes to black. Even though the subscriber's error may have been in entering the calling card number, the operator must always reenter the PIN. Pressing **Start** sends the calling card number and PIN to the DMS switch (not back to the originating ServiceBuilder IN system) for validation.

File NTOAINI.INI, which is detailed in section "Data schema" in this document, contains flags for default formatting of calling card numbers, PINs, and the time the IWS Billing application waits while querying the CCDB before it sends the query to the LIDB.

The digits identifying a non-enhanced calling card appear in the alert text color for any of the following conditions:

- the calling card or directory number is involved a high incidence of fraud
- query fail
- screening restrictions apply
- an attempted call completion on one inter-exchange carrier is tried by a card holder with a calling card restricted to another inter-exchange carrier

If the call is billed to an invalid calling card, the digits display in the error text color. (The operator can re-verify and re-enter the digits and re-send them to the DMS switch.)

A "**?**" appears in the error text color if the digits are missing.

A "**?**" appears in the alert text color if a special billing number is required.

A "**?**" appears in the normal text color if the enhanced calling card holder did not use automation to enter the calling card number.

For LIDB billing (when the field is toggled to "Spl3d"), the operator enters the DN (up to 23 characters) and presses the **Start** key to send the digits to the DMS switch.

4.4 Acct: field 4

Field 9 provides for data entry and displays enhanced calling card account codes, which are available for the IWS Billing application. The operator enters 2–8 digits, which are sent to the CCDB for validation.

An account code is a feature that the card holder can choose to have associated with his or her enhanced calling card to simplify accounting and aid in the prevention of fraud. If the card holder chooses to have one or more account codes enabled, they can be verifiable or unverifiable. No more than 99 account codes can be associated with one card.

If the account code is verifiable, the account code is required to complete the call and may be used either for security or billing sorting. The card holder must provide the appropriate code, which is verified against a card holder list in the CCDB and entered on a custom Automatic Message Accounting (AMA) submodule.

If the account code is unverifiable, the IWS Billing application requires the code; however, the database does not require a specific account code to complete the call. A card holder who is an attorney, for example, might make hundreds of calls each month on behalf of several clients. Use of unverifiable account codes can assign each call to a particular code group; thus the billing statement reflects calls grouped according to client. Each time the account code is used, it is entered on a custom AMA submodule.

Valid account codes appear in normal text color, and invalid codes appear in the error text color. If an account code is required but missing, a "**?**" displays in the alert text color. Figure 13 is an example of a valid account code display.

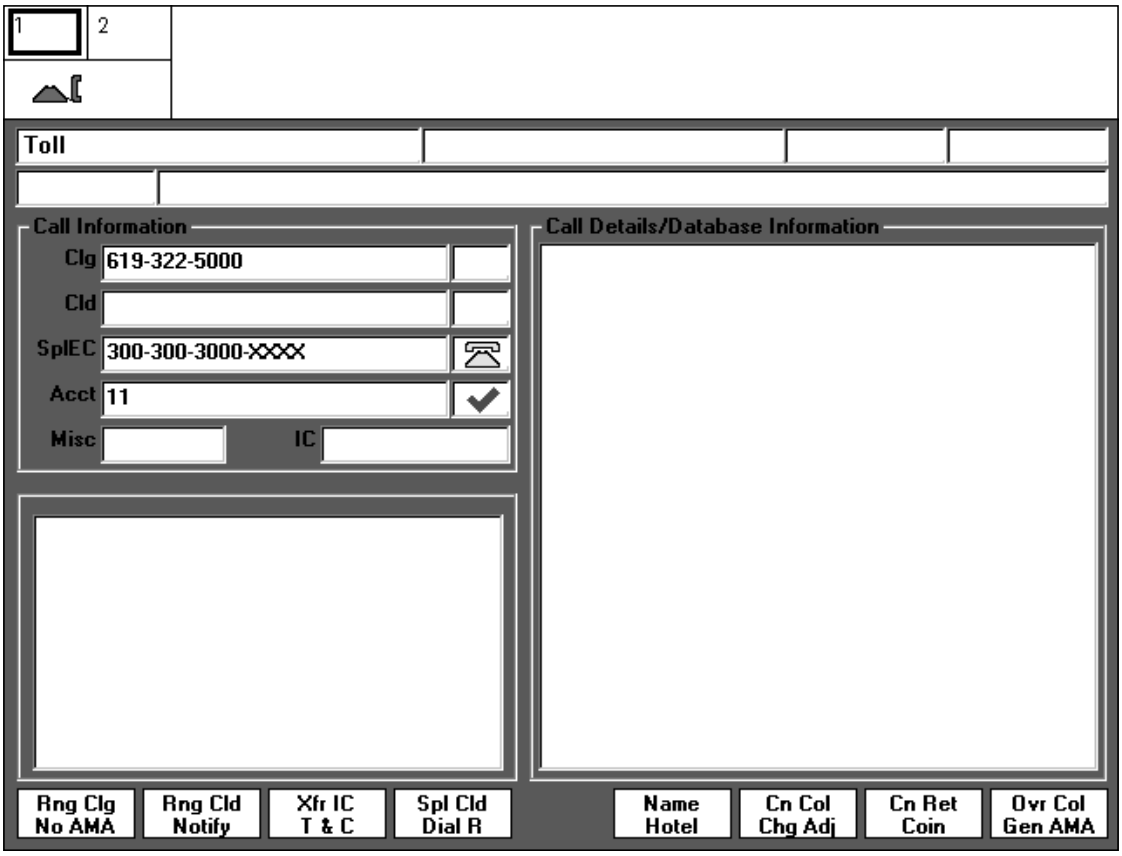


FIGURE 13. Valid account code

4.5 Misc: field 5

Field 10 displays the following miscellaneous information:

R **string ID 0022**

The label displays up to six alphanumeric characters representing a hotel room number. If the room number is required but missing, “R” appears in the alert text color. If the number is invalid, “R” and all or part of the room number are displayed in the error text color.

A **string ID 0023**

The label displays up to six alphanumeric characters representing an authorization number. If the number is required but missing, “A” displays in the alert text color. If the number is invalid, “A” and all or part of the authorization number appear in the error text color.

4.6 IC: field 6

The operator enters up to four digits representing an inter-LATA carrier (IC) code. If valid, the digits are returned to the field, sometimes in conjunction with the carrier name. If invalid, both carrier name and carrier code (if available) appear in the error text color.

4.7 Calling icons: field 7

Field 7 is the calling icon field. Table 1 provides a picture and an explanation of each icon that may appear in field 7.

TABLE 1. Calling icons

Icon name	Icon	Color	Meaning
person		yellow	person paid in non-colorblind mode
person		white	person paid in colorblind mode
station		yellow	station paid in non-colorblind mode
station		white	station paid in colorblind mode
up arrow		red	invalid billing (appears with red “X” in called icon field and down arrow nosepiece icon field) or missing billing (appears with red “?” in called icon field and down arrow in special icon field)

4.8 Called icons: field 8

Field 8 is the called icon field. Table 2 provides a picture and an explanation of each icon that may appear in field 8.

TABLE 2. Called icons

Icon Name	Icon	Color	Meaning
person		yellow	person collect in non-colorblind mode
person		white	person collect in colorblind mode
autocollect		cyan	called party automatically accepts billing (800 services) in non-colorblind mode
autocollect		dark grey	called party automatically accepts billing (800 services) in colorblind mode
station		yellow	station collect in non-colorblind mode
station		white	station collect in colorblind mode
X		red	invalid billing (appears with red up arrow in calling icon field and red down arrow in special icon field)
question mark		red	missing billing (appears with red up arrow in calling icon field and red down arrow in special icon field)

4.9 Special icons: field 9

Field 9 is the special icon field. Table 3 provides a picture and an explanation of each icon that may appear in field 9.

TABLE 3. Special icons

Icon name	Icon	Color	Meaning
person		yellow	person special calling in non-colorblind mode
person		white	person special calling in colorblind mode
station		yellow	station special calling in non-colorblind mode
station		white	station special calling in colorblind mode

TABLE 3. Special icons (Continued)

Icon name	Icon	Color	Meaning
special called (person)		yellow	special called in non-colorblind mode
special called (person)		white	special called in colorblind mode
special called (station)		yellow	special called in non-colorblind mode
special called (station)		white	special called in colorblind mode
up arrow		black	special called (appears with yellow person or phone in field 12)
down arrow		red	invalid billing (appears with red up arrow in calling icon field and red “X” in called icon field) or missing billing (appears with red up arrow in calling icon field and red “?” in called icon field)

4.10 Account code icon: field 10

Field 10 is the account code icon field. Table 4 provides a picture and an explanation of the icon that may appear in field 10.

TABLE 4. Account Code icon

Icon name	Icon	Color	Meaning
check		green	account code is valid

4.11 Data entry and editing

Before data can be entered into a data entry field in the call information area, that field must be active. The operator can tell which field is active by the location of the cursor, which is always inside the active field. If the cursor is not in the field into which data is to be entered, the operator must press a call information area cursor control key. Refer to section “Call information area cursor control keys” on page 46 for more information concerning these keys.

Once the desired field is activated, the operator can begin to enter data. Some of the data entry fields accept only digits, and others accept both digits and alpha text. For those that only accept digits, any alpha text that is entered is not placed in the data entry field and the keystroke is ignored.

Each data entry field has a limited number of characters that it accepts. Once the maximum number of characters for a particular field is entered, any subsequent input is ignored. The operator must either delete enough characters to allow more room in the field, or clear the field. If the field is cleared, the operator can then re-enter the data.

If the data has not been terminated, and the operator presses the cursor control key of the active field, the cursor moves to the beginning of the field. If the operator presses the cursor control key a second time, the data is cleared. In addition, the operator may press the **Home** key to move the cursor to the beginning of the field.

In the calling, called, account, and special fields, an entry that has been terminated can be returned to the position unformatted and invalid. The operator can edit this data with the cursor control keys, the right and left arrow keys, the **Delete** key, the **Home** key, the asterisk (*) key, and the **Backspace** key. In the North American numbering plan (NPA) only, if the operator enters the calling, called, or special number before entering the NPA, it can be added at the end by preceding it with the pound (#) key in the numeric keypad. When the # key is used to enter the NPA, a colon separates the digits from the NPA, as shown in the following example:

5551212#800 is displayed as 5551212:800

If the data has not been terminated and the operator presses a cursor control key other than the key associated with the active field, the data is cleared from the active field, and the cursor moves to the new data entry field.

If data has not been terminated and the operator presses a menu key (such as **Fncts**), that data is cleared.

To clear a field and clear the data locally, the operator presses the associated call information area cursor control key twice sequentially. To clear the data to the switch, the operator next presses **Start**.

The right and left arrow keys, the delete key, and the home key must be datafilled in file XKBOARD.TBL, which is described in *TOPS IWS Base Platform User's Guide*, 297-2251-010. Chapter "KeyBind" in *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015, describes the assignment and validation of keyboard datafill.

4.11.1 Editing numbers in the calling and called fields

If the operator has sent the data in the calling or called fields to the DMS switch and it has been returned, the operator can edit the number with the **Edit** key after the connection to the DMS switch has been terminated. If the number has been confirmed by the DMS switch, it displays formatted and/or in error or alert text color in its field. The operator presses the appropriate call information cursor control key (**Clg** or **Cld**) to move the cursor to the field to be edited. When the operator presses the **Edit** key, the number displays, unformatted, in black color, and the cursor is at the end of the number.

The operator can use the data entry keys to move the cursor and edit the number, and press **Start** to send the number to the DMS switch again.

4.11.2 Editing numbers in the special field

The capability for the operator to use the **Edit** key to edit a confirmed number in the special field must be set in file NTOAINI.INI with the provisioning tool. When special field editing is provisioned, the operator can press the **Spl** key to put the cursor in the special field (if the cursor is not already there). When the operator presses the **Edit** key, the number displays, unformatted, in black color, and the cursor is at the end of the number. The operator can use the data entry keys to edit the special number.

After editing the special number, the operator presses **Start** to have the special number validated.

The *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015, provides a discussion of datafilling file NTOAINI.INI and provisioning the **Edit** key with the KeyBind utility.

4.12 Call information area cursor control keys

The call information area cursor control keys control the operator location of the cursor in the six data entry fields of the call information area. The functionality of each key is identical in every way except the entry field into which the cursor is placed when the key is pressed.

The cursor control keys include the **Clg**, **Cld**, **Spl**, **Acct, IC**, and **Misc** keys. When these keys are pressed, the cursor moves to the corresponding call processing entry field. For example, when the **Cld** key is pressed, the cursor moves to the beginning of the called field of the call information area. If the functions menu appears on the screen, pressing any cursor control key takes the menu down and moves the cursor to the beginning of the corresponding field.

Figure 14 shows a representative example of an IWS keyboard. The cursor control keys are listed following, with a short description of each. Some of these keys can be datafilled by the service provider.

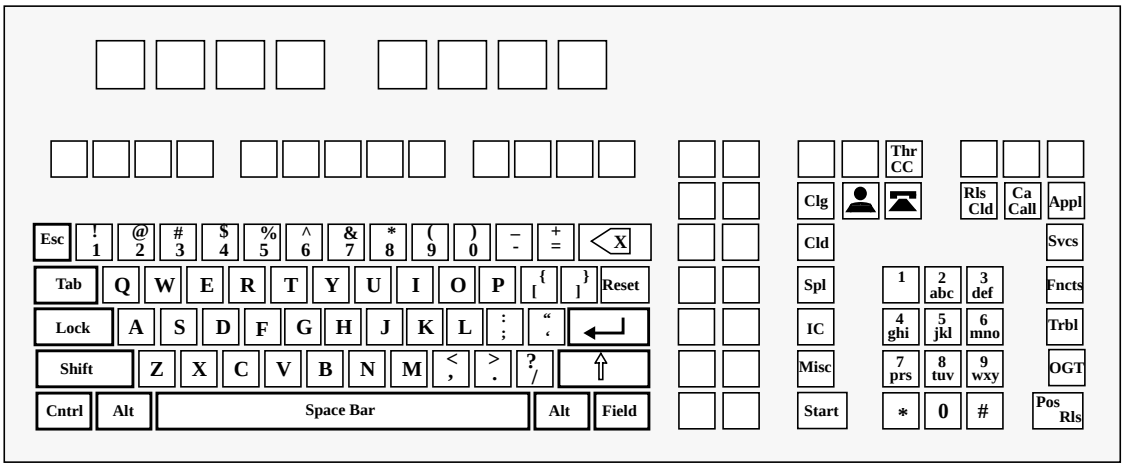


FIGURE 14. IWS keyboard

4.12.1 Clg

Pressing the **Clg** (calling) key moves the cursor to the beginning of the calling field of the call information area.

4.12.2 Cld

Pressing the **Cld** (called) key moves the cursor to the beginning of the called field of the call information area.

4.12.3 Spl

Pressing the **Spl** (special) key moves the cursor to the beginning of the SplCC (special-calling card) field of the call information area.

4.12.4 Acct

Pressing the **Acct** (account) key moves the cursor to the beginning of the account field of the call information area.

4.12.5 IC

Pressing the **IC** (inter-LATA carrier) key moves the cursor to the beginning of the inter-LATA carrier field of the call information area.

4.12.6 Misc

Pressing the **Misc** (miscellaneous) key moves the cursor to the beginning of the miscellaneous field of the call information area.

4.12.7 Additional effects

When no data has been entered into a particular call information area entry field, the cursor control keys move the cursor as just described, when a call is at the position. If no call is at the position, the cursor is not present. When data has been entered into the entry field, additional effects occur when the cursor control keys are pressed.

If data is entered into a field and the **Start** key has not been pressed, and a cursor control key corresponding to a field other than the one in which the cursor is currently located is pressed, the data is erased from the current field, and the cursor is moved to the new field.

If the operator presses the cursor control key for the same field in which the cursor is currently located, the cursor returns to the beginning of the field.

If the cursor is at the beginning of a field and the cursor control key for that field is pressed, the field is cleared.

When the operator enters data into a field and the **Start** key is pressed, the data is sent to the appropriate location for validation. If the data entered is valid, it is formatted and redisplayed in the field and the cursor is relocated to the beginning of the field. If the data entered is invalid, the data changes color to the error text color and the cursor is relocated to the beginning of the field. When this data displays in the field, pressing a cursor control key for another field leaves the data displayed.

4.13 Call information class icon keys

The class icon keys offer a way for the operator to request a class charge for the call. When these keys are pressed, the appropriate class icon (either station or person) displays.

If a class charge key is pressed while the cursor is in the miscellaneous, inter-LATA carrier, or account fields of the call information area, it is ignored and no action is taken. If, however, a class icon key is pressed while the cursor is in the calling, called, or special-calling card fields, a request for the appropriate class charge is made of the DMS switch, and upon response the proper billing icon displays in the field's corresponding icon field.

4.13.1 Station 

The station key is pressed to apply a station class charge. When this key is pressed, a request for a station class charge is sent to the DMS switch.

4.13.2 Person 

The person key is pressed to apply a person class charge. When this key is pressed, a request for a person class charge is sent to the DMS switch.

If either the station or person special calling or called billing is present (that is, if one of the icons appears), the number is entered in Spl3d, and **Start** is pressed, LIDB validation will occur. If neither of the icons is present, the number is validated, but not against the LIDB.

4.14 Miscellaneous call handling keys

4.14.1 ThrCC

The **Thr/CC** key is pressed to toggle the fields between data entry for LIDB (or third party) billing and enhanced calling card billing. This key is applicable only when an enhanced calling card database is connected; that is, when the parameter in file NTOAINI.INI that connects the CCDB is set either to DBConnected=1 or DBConnected=3. See *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015, for a description of the parameters of file NTOAINI.INI.

4.14.2 Ovr

The **Ovr** key is operational when pressed by a customer service expert (CSE) with Queue Management System Customer Assistance Service Enhancements (QMSCASE) "Monitor" capability to override restrictions placed against an enhanced calling card number. This key is applicable only when an enhanced calling card database is connected; that is, when the parameter for connecting the CCDB is set either to DBConnected=1 or DBConnected=3 in file NTOAINI.INI. See *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015, for a description of the parameters of file NTOAINI.INI.

4.14.3 DB

The **DB** (database) key is pressed to change the softkey set from the default toll key display to the database key display (and back again). This key is applicable only when an enhanced calling card database is connected; that is, when the parameter for connecting the CCDB is set either to DBConnected=1 or DBConnected=3 in file NTOAINI.INI. See *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015, for a description of the parameters of NTOAINI.INI.

4.14.4 Con

The **Con** (connect) key is pressed to signal the DMS switch to connect to the appropriate party while the call is still at the position.

4.14.5 CaCall

The **CaCall** (cancel call) key acts as a toggle key. When it is pressed the first time, the call is marked as canceled. The canceled mark is removed if the cancel call key is pressed a second time.

4.14.6 PosRls

The **PosRls** (position release) key is used to attempt to release a call from the position.

4.14.7 Start

The **Start** key is pressed to invoke various call processing and system actions that are taken by the operator to be processed and reported to the DMS switch.

4.14.8 Memo

The **Memo** key is pressed to create a new memo or edit an existing one, and to display the memo window or clear an existing one. The memo window contains memo text associated with the current call. For more information on the memo window, refer to “Memo window (GOS environment)” on page 76. The **Memo** key is not default-datafilled and must be added using the KeyBind utility, which is described in *TOPS IWS RAMP and Provisioning User’s Guide*, 297-2251-015.

4.14.9 Edit

The **Edit** key is pressed to begin editing a number that has been returned from the DMS switch to the calling, called, or special field. If the number has been confirmed by the DMS switch, it displays formatted and/or in error or alert text color. When the operator presses the **Edit** key, the number displays unformatted, in black color, with the cursor at the end of the number. For more information on editing these fields, refer to “Data entry and editing” on page 44. The **Edit** key is not default-datafilled and must be added using the KeyBind utility.

5.0 Call information area softkeys

5.1 Toll and assist softkeys

The IWS Billing application provides up to 16 customer-definable softkeys that simplify the billing process. The labels for the first eight softkeys (numbered 0-7 from left to right) are displayed in the bottom row, and the second eight (numbered 8-15 from left to right) are displayed in the top row. Each label can be up to seven characters long. The text string identifies the function invoked when the operator presses the softkey (or shift-softkey for softkeys 8-15). Figure 15 shows the toll and assist softkeys in their position on the bottom of the screen. The softkeys shown comprise the default set that appear on the screen at call arrival.

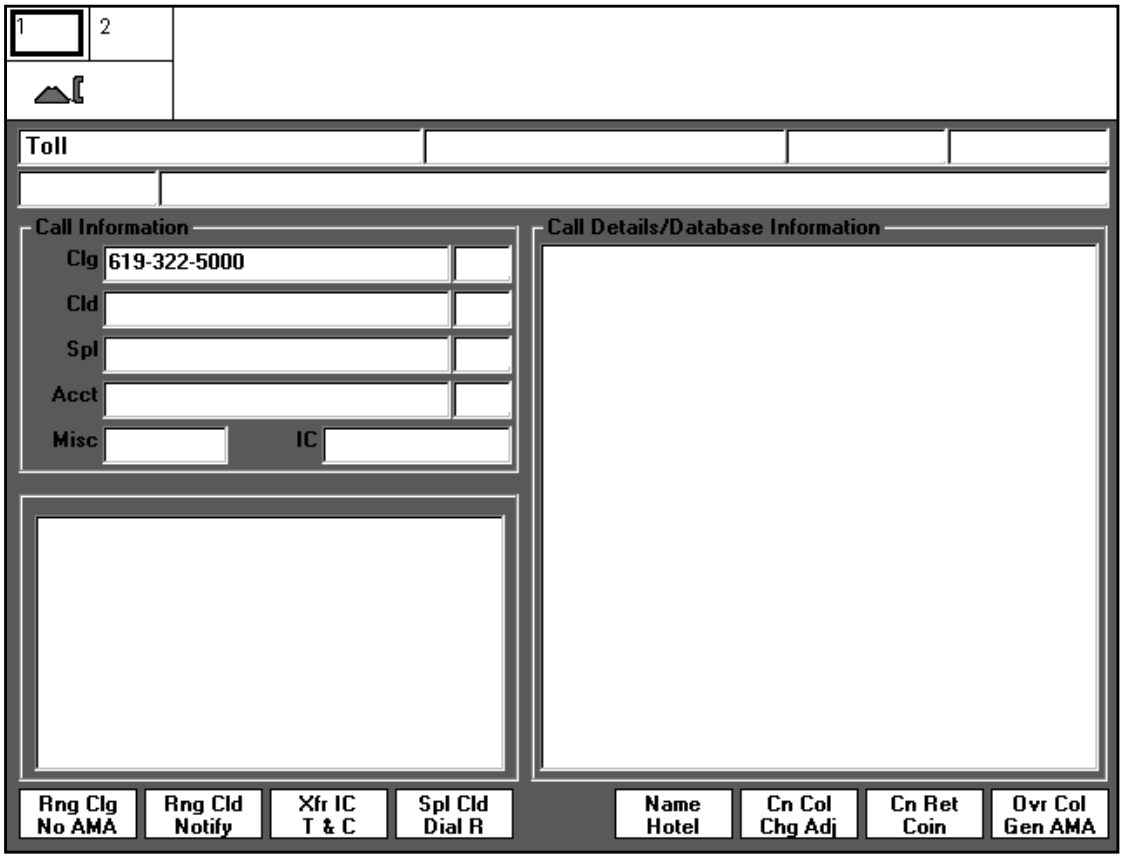


FIGURE 15. Toll and assist softkeys

Two steps define the softkeys. First, the function ID must uniquely identify the IWS function in the default file XFNCTS.TBL. Second, the function ID and label for each softkey must be datafilled in file XPCCSK.TBL. Refer to *TOPS IWS Base HMI Application Guide,* 297-2251-013, and *TOPS IWS Base Platform User's Guide,* 297-2251-010, for details on file XFNCTS.TBL. File XPCCSK.TBL is detailed in the chapter "Data schema" on page 115 in this document.

Any function that is defined to be used as a softkey must be datafilled in the position in the functions menu. If extra input is required to process the request, as is the case with the Notify function, the functions menu window displays when the softkey is pressed. The first data entry field shows the menu item number corresponding to the selected function. The cursor is positioned in the second data entry field of the functions menu, ready for data input. See Figure 16.

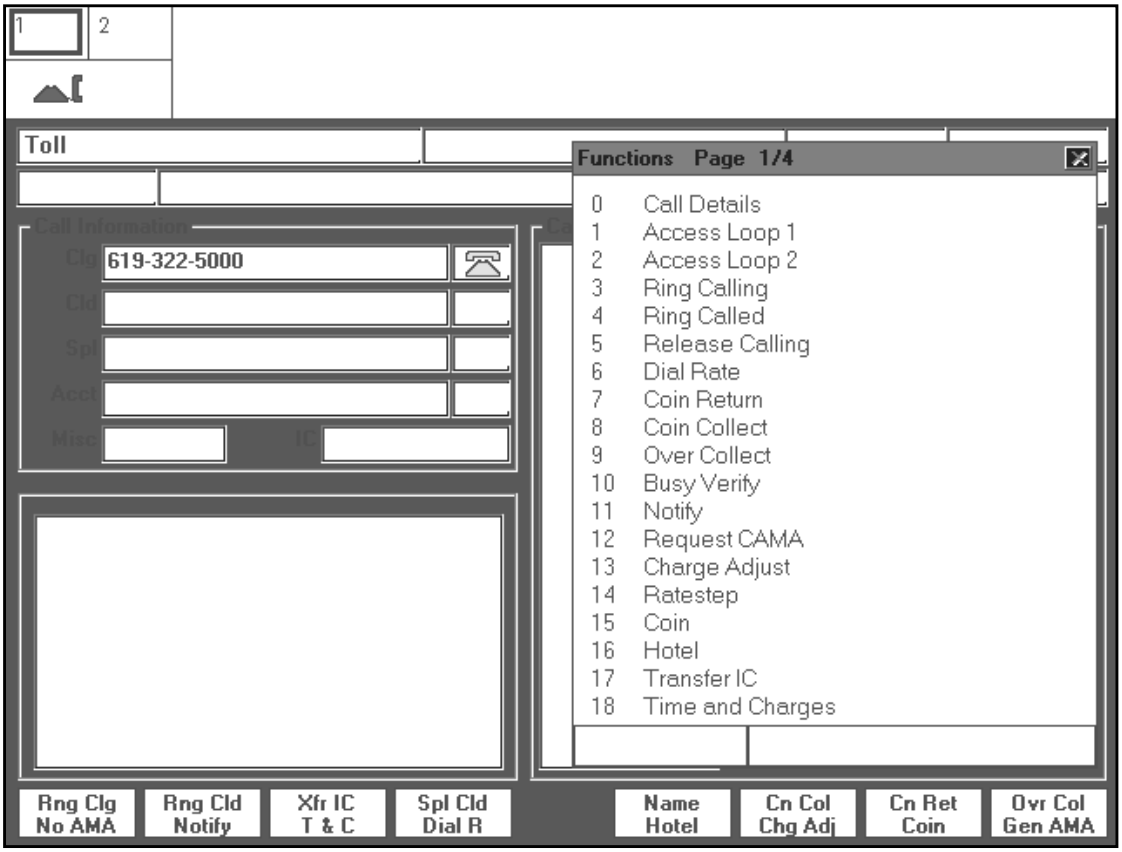


FIGURE 16. Sample functions menu

If the softkey function is not datafilled in the functions menu, the functions menu window shows a question mark (?) in the first data entry field instead of the menu item number.

5.2 Database softkeys

In addition to the customer-definable softkeys, the IWS Billing application provides database softkeys. The labels for the database softkeys are datafilled in file PCCDBSK.LNG, which is detailed in the chapter “Data schema” on page 115 in this document.

5.2.1 Database queries

The operator presses one of the database softkeys, and if all required information is present, the IWS Billing application launches a query to the database, which responds

with a message shown in the database window. The labels for display of database information are found in file DATABASE.LNG. To return to the toll and assist softkey display, the operator presses the **DB** key again.

To change the softkey display from the default set to the database display set, the operator presses the **DB** key on the keyboard to display the database softkeys (Figure 17).

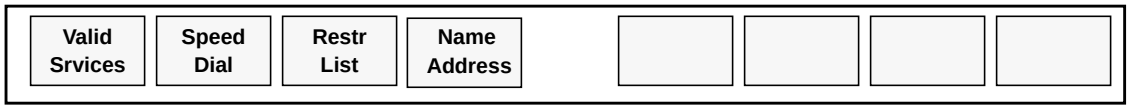


FIGURE 17. Database softkey example

During a database query, the clock icon appears in the message/status area (MSA) of the screen. No other keystrokes are accepted during the query, and the call cannot be released from the position.

5.2.2 Valid Srvices

Pressing the valid services softkey brings to the screen a list of the services enabled for the card holder, who must provide a valid enhanced calling card number, personal identification number (PIN), and calling number. The complete list of services should be datafilled in file XDBSRVC.TBL, and the index into the appropriate language should be datafilled in file XDBCOMP.TBL. Both of these files are detailed in the chapter “Data schema” on page 115 in this document.

5.2.3 Speed Dial

Pressing the speed dial softkey brings to the screen a speed dial list associated with the calling card number and PIN. The card holder must provide a valid enhanced calling card number and PIN to query the speed dial numbers associated with the account.

5.2.4 Restr List

Pressing the restriction list softkey brings up a list of restrictions associated with the enhanced calling card number and PIN. To query the restriction list, the card holder must provide the calling card number and PIN.

5.2.5 Name Address

Pressing the name and address softkey brings to the screen the billing name and address associated with the enhanced calling card number and PIN of the card holder.

6.0 Call processing

6.1 Call arrival

When a call arrives at a position, the Call Information and Call Details Database Information windows display. These windows provide the operator with information about a service the IWS Billing application has been datafilled to handle. All pertinent call information appears in the windows. The toll and assist softkeys are displayed, and the cursor is positioned in the appropriate call information area data entry field. New information is displayed as it arrives.

The operator can prompt the caller for any information necessary to provide the requested service. After this information is entered, the operator presses the **PosRls** key to complete the call. If an account code is required, the screen display prompts the operator to enter it. If there are restrictions on the call, they are listed in the violated restrictions window, and the call is blocked. Table 5 lists the information required to complete an action.

TABLE 5. Required information for requested service

Requested service	Caller information
Display valid services	Credit card number (CC number)/PIN, calling number
Display speed dial list	CC number/PIN
Display restriction list	CC number/PIN
Display billing name and address	CC number/PIN
Complete call	CC number/PIN, calling number, called number

6.2 Call release

When a call handled by the IWS Billing application has been floated from the position, the Call Information, Call Details/Database Information, and Violated Restrictions windows remain displayed on the screen. No other information (such as cursor in the call information area or softkey labels) shows until the operator transitions to busy state. During the time while no cursor is displayed, only the following keys are available: **OGT**, **Appl**, **Svcs**, **Fncts**, **Trbl**, and **CT4Q**.

After the enhanced calling card is verified, the call can float from the position even if the calling card database (CCDB) is down.

6.3 Lost call arrival information

If an audible tone indicates the arrival of a new call but there is no corresponding update of screen information, the operator must invoke the call details function from the functions menu. Invoking this function creates a display of all of the information known about the call.

6.4 Menus

The *TOPS IWS Base HMI Application Guide*, 297-2251-013, contains complete details on the functions, services, applications, trouble, outtrunks, and call type for queueing (CT4Q) menus. As long as the call information area is displayed on the screen, the specific menu keys are valid with or without a call at the position. However, the DMS switch ignores some operator actions described in the following paragraphs until a call arrives at the position.

For each menu, a set of hot keys can be defined. A hot key is a single key that invokes a specific function (or service, application, trouble, outgoing trunk, or CT4Q) found in the menu. A hot key replaces the series of keystrokes that might be necessary to reach a highly used menu item. For information on hot keys for these menus, refer to the documentation on file XKBOARD.TBL in *TOPS IWS Base Platform User's Guide,* 297-2251-010.

The following keys access the associated menus:

- **Fncts** functions menu
- **Svcs** services menu
- **Appl** applications menu
- **Trbl** trouble menu
- **OGT** outgoing trunks menu
- **CT4Q** call type for queueing (CT4Q) menu

7.0 Area 3

7.1 Violated restrictions

While a call that has been entered as an enhanced calling card (ECC) is at the position, the IWS Billing application queries the calling card database (CCDB) for a list of restrictions, if any apply. The IWS Billing application displays these automatically in the violated restrictions window. Normally, an operator does not have the authority to override a restriction and release the call. The operator can pass the call to a supervisor or to an operator with datafilled monitor capability who has the authority to override them.

7.2 Estimated call charges

The TOPS estimated call charges feature allows the operator to estimate the cost of completing a call. The estimate of charges functionality is activated in the DMS switch.

The operator presses the **Estimate Call Charge** key to give focus to the estimated call charges window, which is displayed in area 3. The **Estimate Call Charge** key must be datafilled in file XKBOARD.TBL with KeyBind, which is described in *TOPS IWS RAMP and Provisioning User's Guide,* 297-2251-015. The operator then enters or modifies the call data needed to calculate the charges for the call and selects function Calculate Est Chg.

The estimated call charges are calculated at the DMS switch and display at the IWS position. The operator then quotes the estimate to the subscriber. Figure 18 shows an example of the estimated call charges window.

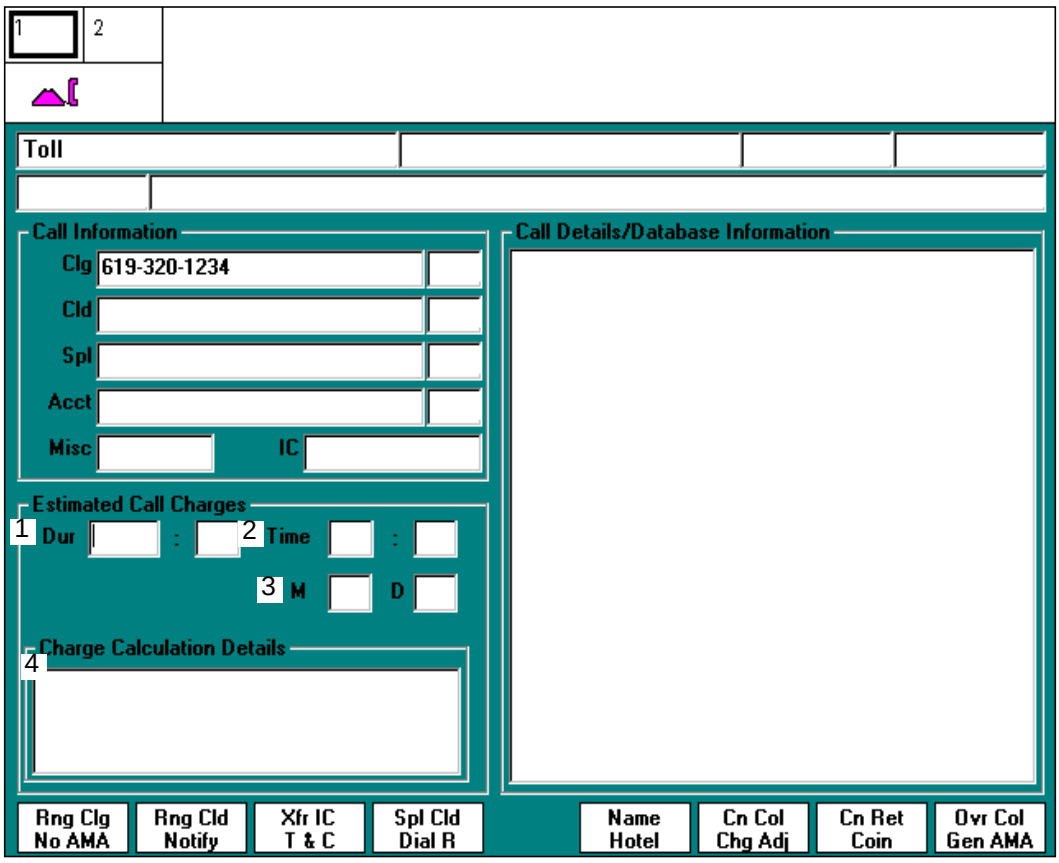


FIGURE 18. Sample estimated call charges window

An operator can change the call information and perform as many estimates as necessary. If required, the operator may generate an AMA record for each estimate manually by using GEN AMA from the functions menu.

Charges are estimated for a call based on the attributes listed below. All but the last three on the list are the elements commonly included in call information. The operator can use the values for these attributes to calculate a charge, or key in new values based on subscriber input:

- calling number
- called number
- overseas number
- special number
- call origination type (dial rate)
- station class
- class charge
- rate step
- time of day the call is placed
- day and month the call is placed
- duration of the call

The operator can change any of the values of these attributes if the called party is not connected. If the called party is connected and timing has started, then the operator cannot change the called number or the class charge. The numbers of the parties connected and the existing class charge are used for the charge estimate.

7.2.1 Estimated call charges window fields

The fields described below are labeled in Figure 18 on page 58. Language file ESTWNDW.LNG defines the strings used for the Estimated Call Charges window title and the various field labels within the window.

7.2.1.1 Duration of call: field 1

Field 1 displays the label and the length of time of a call in hours and minutes.

Dur **string ID 0004**

The maximum length of this label is four characters.

A maximum of 1090 hours (four digits) and 59 minutes (two digits) can be displayed. The shortest call allowed is one minute. If the value is an error, it is displayed in the error text color.

7.2.1.2 Time: field 2

Field 2 displays the time of day, in hours and minutes, of the estimate of charges call.

Time **string ID 0005**

The maximum length of this label is five characters.

The time is in 24-hour format, with a range of 00-23 for hours and 00-59 for minutes. Range checking is performed at the position.

7.2.1.3 Date: field 3

Field 3 displays the date, in months and days, of the estimate of charges call.

M **string ID 0002**
The maximum length of the month label is two characters.

D **string ID 0003**
The maximum length of the day label is two characters.

The day is a maximum of two digits, with a range of 1-31. The month is also a maximum of two digits, with a range of 1-12. Range checking is performed either at the position (for days between 1-31 and months between 1-12) or by the DMS switch (for oddities such as 31 February).

7.2.1.4 Charge Calculation Details: field 4

Field 4 displays the title for the charge calculation fields and the result of the estimate of charges for a call. File MPXPARM.INI contains parameters that affect the way monetary amounts are displayed. The dollar sign ($) is the default. The default format is:

$XXXXXXXX.YY

Charge Calculation Details **string ID 0001**
The maximum length of this label is 27 characters.

TOTAL CHG **string ID 0006**
The maximum length of this label is 10 characters. The maximum monetary amount is 4,294,967,294, for a length of 12 characters.

INIT PERIOD **string ID 0007**
The maximum length of this label is 12 characters. The time displays in minutes (maximum of four) and seconds (maximum of two) separated by a colon (:). The maximum monetary amount for the initial period is also 4,294,967,294.

OVT PERIOD **string ID 0008**
The maximum length of this label is 12 characters. The time display is the same as for the initial period, and the maximum monetary amount is also the same.

7.2.2 Working in the Estimated Call Charges window

A call must be at the position to activate the Estimated Call Charges window. The operator presses the **Estimate Call Charge** key to activate the estimated call charges window. The cursor moves to the first input field (duration of call). The data input fields are grouped into the following three categories to transmit data to the DMS switch:

- time: hour and minute fields
- date: month and day fields
- duration: hour and minute fields

When the cursor is in the first field of each group, pressing **Start** terminates the data for that field and moves the cursor to the second field (in that group). Pressing **Start** from the second field in any group transmits the call attributes associated with that group to the DMS switch. Upon validation from the DMS switch, the cursor is then placed in the first input field of the next group. The cursor cycles through the three input fields in this manner. When the operator presses **Start** while the cursor is in the last input field, the cursor returns to the first input field. The **Tab** key moves the cursor forward among the input fields in a group, and the **Shift+Tab** combination moves the cursor backward among the input fields in a group. The operator must press **Start** to move into another group of fields, however.

The operator can press the field selection key to cycle through all the input fields without sending the data to either the IWS or the DMS switch. In an input field with non-terminated or invalid data, the operator can press the field selection key in the first field of a group and clear the data in that field, or in the second input field and clear the data in both fields of the group. The field selection key must be datafilled in file XKBOARD.TBL with KeyBind, which is described in *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

If the operator presses any IWS Billing application call handling keys (such as **Misc**, **Acct**, or **PosRls**), focus returns to the IWS Billing application. Also, the operator can access all menus from the estimate of charges window.

Pressing the **Backspace** key erases any input data. Data previously transmitted to the DMS switch may be erased or overwritten if the operator presses **Start** and again cycles through the data.

Successful estimate of charges to complete a call is dependent on fulfillment of the following conditions:

- datafill contained in the rating system (using switch data tables)
- attributes of the call being estimated
- duration, date, and time of the call

The operator may enter a time and no date, or vice versa. However, a day and a month must both be specified if the date input fields are used and an hour and minute must both be specified if the time input fields are used. If no date or time is entered, the DMS switch uses the current date and time as the default.

7.2.3 Estimate of charges

Calculating charges can be performed with or without entering information into the estimated call charges window, but certain features and limitations apply for each method. These are discussed in the following sections.

7.2.3.1 Calculating charges from the Estimated Call Charges window

Estimating charges from the Estimated Call Charges window enables the operator to refine the call attributes of date, time, and duration.

The results of the estimated charge vary based on whether duration is a factor in the estimation. If a duration is specified, the position displays the total calculated charges for that duration. If no duration is specified, the position displays the following information in the Charge Calculation Details field (as shown in Figure 19):

1. the length of the initial period
2. the calculated charges for the initial period
3. the length of the overtime period
4. the calculated charges for each overtime period

Taxes and surcharges are not accounted for in the estimate, and if the time crosses a rate boundary, the rate is based on the start time of the call.

7.2.3.2 Calculating charges from the IWS Billing application

Estimating charges during normal call processing uses the details of the call currently at the position. The operator does not provide the duration, date, or time of day of the call because these values are entered only through the estimated call charges window.

The operator selects function Calculate Est Chg from the Functions menu, and if a successful estimation can be performed, the Estimated Call Charges window is activated and the initial and overtime estimations are displayed (see Figure 19).

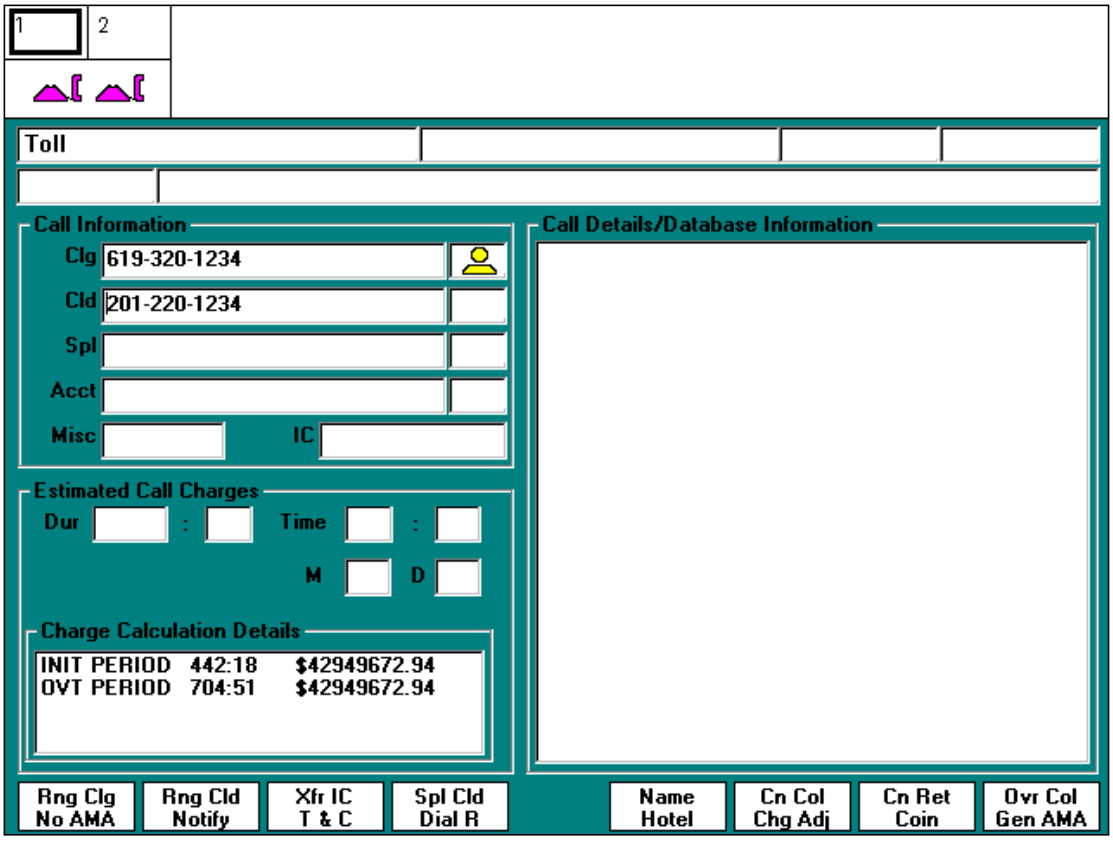


FIGURE 19. Estimated cost of a call calculated during normal call processing

The estimated cost of the call is displayed in the Charge Calculation Details field of the Estimated Call Charges window (see Figure 20).

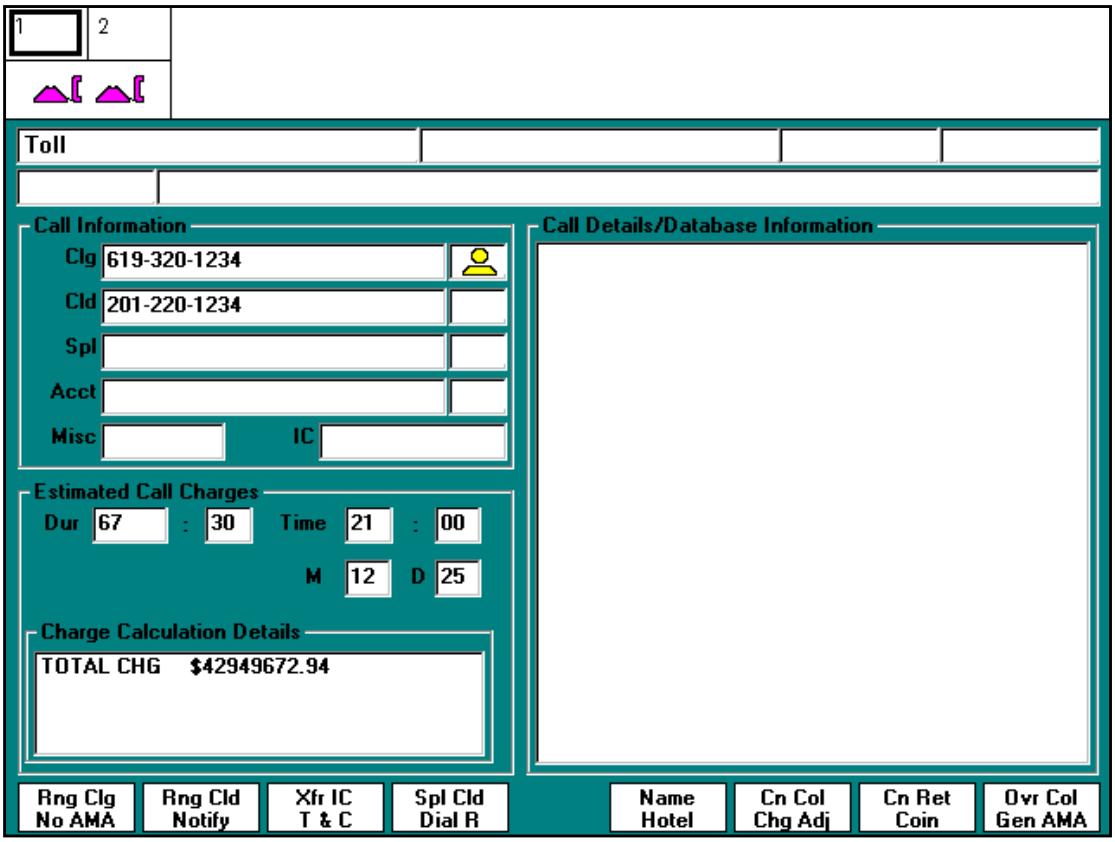


FIGURE 20. Estimated cost of a call calculated through Estimated Call Charges window

If the estimation is attempted from the IWS Billing application, and a called party is not specified, the DMS switch reports an invalid charge estimation attempt with a No Action reason (Estimate Charge Calculation Failure) in the message/status area (MSA), and the Estimated Call Charges window does not get focus.

After an estimate of charges has been calculated, two options are available:

1. Change the values of the call attributes and perform another estimation of charges in the estimated call charges window. The calculation field, in which the estimate of charges is displayed, is cleared.
2. Release the call (**CaCall**, **PosRls**).

Charge calculation failure can occur for two reasons:

- operator did not supply enough data to estimate the charges
- rating system unable to calculate charges

If the rating system is unable to perform a charge calculation, a No Action reason displays in the transient field of the MSA.

7.3 Internal booked call database (Global Operator Services environment)

In the Global Operator Services (GOS) environment, the internal booked call database handles operator assisted calls that cannot be processed immediately because of lack of resources or inability to reach the called party. The database is used to store the call details of a call for a later attempt (up to 19 hours and 59 minutes later) at processing.

A timed call can be stored with a recall time so that the call automatically returns to an operator when the timer expires.

An untimed call can also be stored. With the exception of a route-queued database call, the untimed call does not automatically return to the operator—it must be retrieved manually. A route-queued call is stored against a specific route. When a trunk member of the that route becomes available, the call automatically returns to an operator for completion.

An Open Numbering Plan call on which charges have been estimated can be booked if the called number has not been connected. The recall time must be calculated on the current time and not on the time entered for the estimation.

Two call origination types are specific to the booked call database, booked call and booked call database recall. The “booked call” origination type is used for calls, coming to a TOPS office, that will be placed in the database. Specific DMS translations are required to specify this call origination type. The “booked call database recall” origination type is for calls originating from the booked call database. This type signifies to the operator that the call has automatically recalled from the database and no subscribers are attached.

When a call is successfully stored in the database, the operator receives a serial number associated with that call. An operator can retrieve a call from the database by either the serial number or the calling number. If a calling number has more than one booked call stored against it, the oldest call associated with the calling number is retrieved first. The operator can modify the information about a call and store it again, or delete it. Deletion removes the information from the database, but the operator can still complete the call. The operator can also clear any booked call database information from the screen.

The internal booked call database functionality is activated in the DMS switch.

7.3.1 Reaching the internal booked call database

When a call is at the position (including when the operator has accessed a loop), the operator can press the Internal Booked Call DB key to give focus to the Internal Booked Call Database window, which is shown in Figure 21. The **Internal Booked Call DB** key must be datafilled in file XKBOARD.TBL with KeyBind, which is described in *TOPS IWS RAMP and Provisioning User’s Guide*, 297-2251-015.

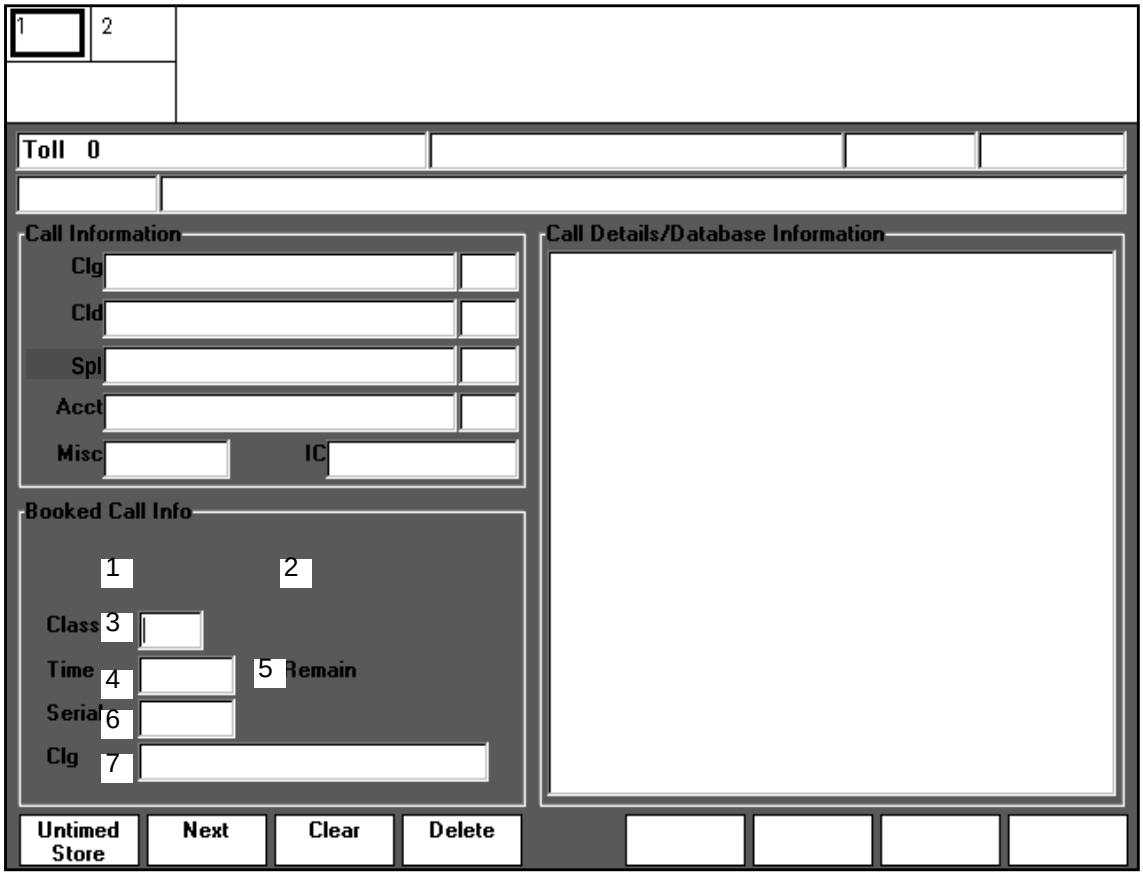


FIGURE 21. Internal Booked Call Database window and softkeys

7.3.2 Internal Booked Call Database window fields

Each field of the Internal Booked Call Database window is discussed in terms of the text that may be displayed in it. String IDs identify the text strings that are displayed as field labels and informational messages in each field. Both the identifying label and the text string for each field can be changed in language file BKCALLDB.LNG.

7.3.2.1 Booked call action label: field 1

Field 1 displays one of the labels shown below. Each of these labels can be up to nine characters long. Each of the following strings indicates a successful attempt if no error message displays in field 2, described below.

CLASS **string ID 0006**

This label displays to indicate that an attempt has been made to class a call. The label remains until the operator completes the actions necessary to store, retrieve, or otherwise process the call.

STORE **string ID 0007**

This label displays to indicate that an attempt has been made to store a call.

RETRIEVE **string ID 0008**

This label displays to indicate that an attempt has been made to retrieve a call.

DELETE **string ID 0009**

This label displays to indicate that an attempt has been made to delete a call.

RECALL **string ID 0010**

This label displays to indicate that the call has been successfully returned from the internal booked call database.

7.3.2.2 Booked call action status: field 2

Field 2 displays the status of one of the actions described above. The label can be up to nine characters long.

Failed **string ID 0011**

The operator's attempt to class, store, retrieve, or delete the booked call is unsuccessful.

Range? **string ID 0012**

The label displays when the operator keys in a value that is out of range. Additionally, the out-of-range value appears in the error text color. In the following figure, the time exceeds the allowed range.

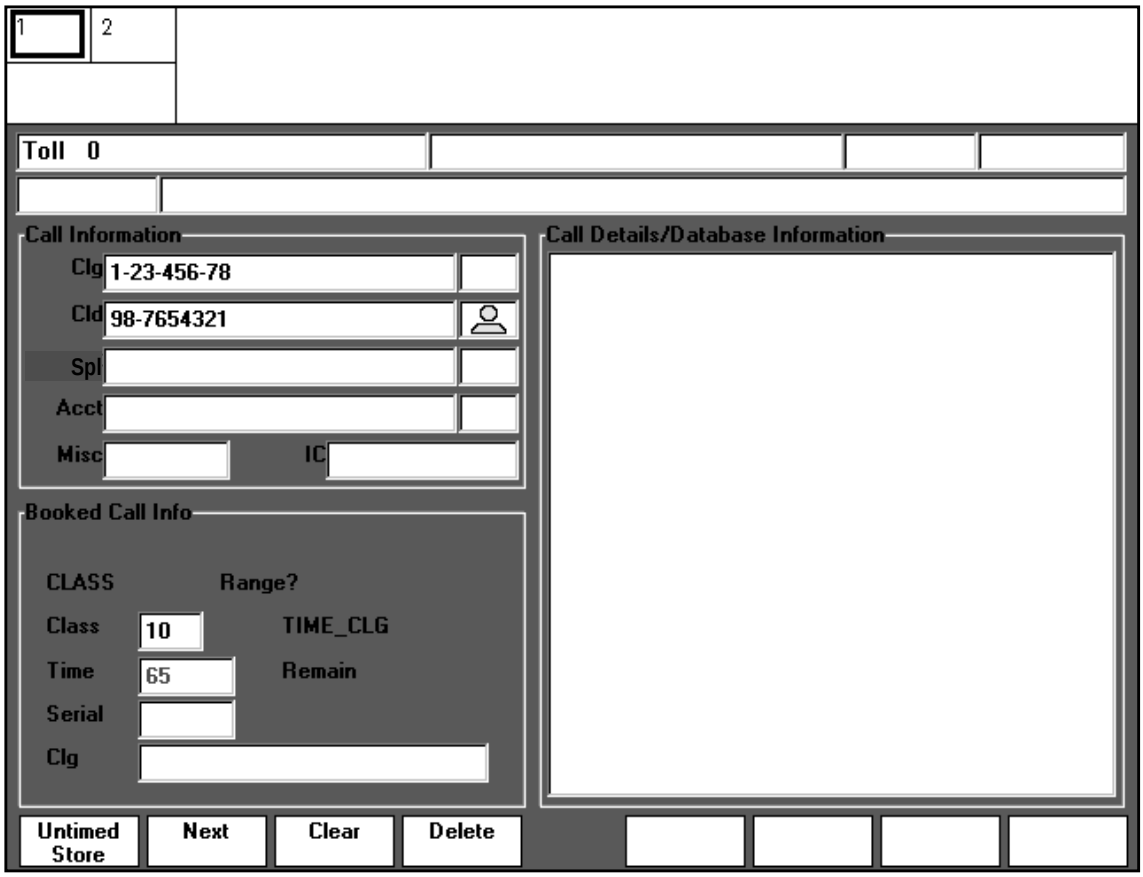


FIGURE 22. Out-of-range value

7.3.2.3 Class: field 3

Field 3 provides a label, a space for the operator entry of a class number, and a string that returns the class of the call.

Class **string ID 0001**

The maximum length of this label is six characters.

The operator enters a class number (within the range of 1-99) that indexes into file XDBCLASS.TBL to map the number to the screen display. DMS table IDBCLASS contains the datafillable strings (listed below) of the call's class.

- TIME CLG
- TIME CLD
- RTE_Q_CLG
- RTE_Q_CLD

The actual class of the call (up to ten characters) is returned after the operator input of the class number. The class corresponds with a set of parameters to indicate the specific characteristics of the call; for example, whether the called or calling party should be outpulsed first, whether or not the call is route queued, and so on.

7.3.2.4 Time delay: field 4

Field 4 provides for the operator entry of a valid delay time (00:01-19:59) to indicate the number of hours from now until the call will recall. Before data is accepted in this field, the operator must enter a valid called number, satisfy billing, and class the call. After entering a valid delay time, the operator presses **Start** to store the call.

Time **string ID 0002**
The maximum length of this label is six characters.

7.3.2.5 Time remaining: field 5

Field 5 displays the time remaining (00:01-19:59) before the call returns to an operator. The time remaining displays after the operator has satisfied the conditions noted in the time delay description.

Remain **string ID 0005**
The maximum length of this label is six characters.

7.3.2.6 Serial number: field 6

Field 6 displays the serial number of the call. The format is six digits in the string ddxxxx, where “dd” represents the day of the month (0-31) and “xxxx” represents a four-digit sequential number (0001-9999).

Upon the successful store of either a timed or untimed call, the serial number displays.

Serial **string ID 0003**
The maximum length of this label is six characters.

7.3.2.7 Calling number: field 7

Field 7 displays the following label and provides for operator entry of the calling number of the booked call.

CLG **string ID 0004**
The maximum length of this label is six characters.

7.3.3 Processing calls for the internal booked call database

When a call requesting booking arrives at the position, the operator presses the **Booked Call Database** hard key to activate the Internal Booked Call Database window. The IWS Billing softkeys are cleared and the internal booked call database softkeys are displayed. The cursor moves to the class number input field. The operator can press the **Tab** key or the Field Selection key to move the cursor through the rest of the input fields. The Field Selection key must be datafilled in file XKBOARD.TBL with the KeyBind utility, which is described in *TOPS IWS RAMP and Provisioning User’s Guide*, 297-2251-015.

If the operator presses a a call information window cursor control key or a menu key, the cursor returns to the IWS Billing application field that was indicated by the keypress.

7.3.4 Internal booked call database softkeys

Table 6 shows the internal booked call database softkeys are datafilled in language file BKCALLSK.LNG. Functionality for these softkeys.

TABLE 6. Internal booked call database softkey functionality

Softkey label	Functionality
Untimed Store	Stores the details of an untimed or route-queued call in the booked call database.
Next	Returns a retrieved call to the database and retrieves the next oldest call associated with the specified calling number.
Clear	Clears any booked call database information from the screen about a call that has been retrieved, deleted, or stored. The call itself is not deleted from the database.
Delete	Deletes a booked call from the database, although the operator can still complete the call.

7.3.4.1 Storing a call

To store a call in the internal booked call database, the operator must supply a valid called number, satisfy billing, and class the call. To apply a class to the call, the operator enters a valid class number and presses **Start**. If the DMS switch validates the number, the associated class name displays in the class identifier field. If the number is invalid, it is displayed in the error text color, and an error message appears in the booked call action status field. Additionally, timing cannot have started, and the call cannot be coin or restricted to be stored.

7.3.4.1.1 Storing a timed call

To store a timed call, the operator enters a valid delay time (00:00-19:59) in the time delay input field after supplying a valid called number, satisfying billing, and classing the call. The operator must remember the format for minutes and hours. Two or fewer digits are interpreted as minutes (valid range 0-59). Any further digits (between 1-19) are interpreted as hours. Thus the operator who keys “120” to mean two hours is actually entering a delay time of one hour and 20 minutes. The correct way to enter two hours would be to key “200.”

The operator next presses **Start** to store the call.

7.3.4.1.2 Storing an untimed call

To store an untimed call, the operator presses **{Untimed Store}** after supplying a valid called number, satisfying billing, and classing the call. A serial number displayed in the serial number field indicates that the call has been successfully stored. The called party cannot be connected while storing a route-queued call.

7.3.4.1.3 Database store failures

Table 7 shows the reasons an attempt to store a call in the internal booked call database may fail.

TABLE 7. Database store failures

Database store failure reason	Error handling
Class of booked call has not been entered correctly	“Failed” in booked call action status field
Invalid delay time has been specified	“Failed” in booked call action status field
Delay time out of range.	“Range?” in booked call action status field, input is displayed in error text color
Maximum number of calls in database reached	“Failed” in booked call action status field
Maximum number of calls in half-hour period reached	“Failed” in booked call action status field
Maximum number of queued calls on a route exceeded	“Failed” in booked call action status field
Resources available to queue call exceeded	“Failed” in booked call action status field

7.3.4.2 Retrieving a call

An operator can retrieve a call from the internal booked call database by using either the calling number of the customer or the booked call database serial number.

If the call is successfully retrieved from the internal booked call database, the relevant call information, including the amount of time the call was stored in the database and the calling number or the serial number, or both, are displayed in the internal booked call database window. “Retrieve” is displayed in the booked call action field. Any call details associated with the call are also displayed.

The field displays in the internal booked call database window show the operator how to process the call. If the retrieved call is route-queued, the time delay field displays the length of time the call has been queued.

While the operator has the information on a specific booked call on the screen, that call is marked as viewed in the database, and any attempt to access by other operators is denied.

7.3.4.2.1 Retrieving a call by calling number

To retrieve a booked call by calling number, the operator enters a valid calling number in the calling number field, followed by **Start**. If more than one call is stored against the same calling number, the oldest call is retrieved first. The operator can press the **{Next}** softkey to return that call and retrieve the next oldest call, and so on.

7.3.4.2.2 Retrieving a call by serial number

To retrieve a booked call by serial number, the operator enters a valid 6-digit serial number in the serial number field, followed by **Start**.

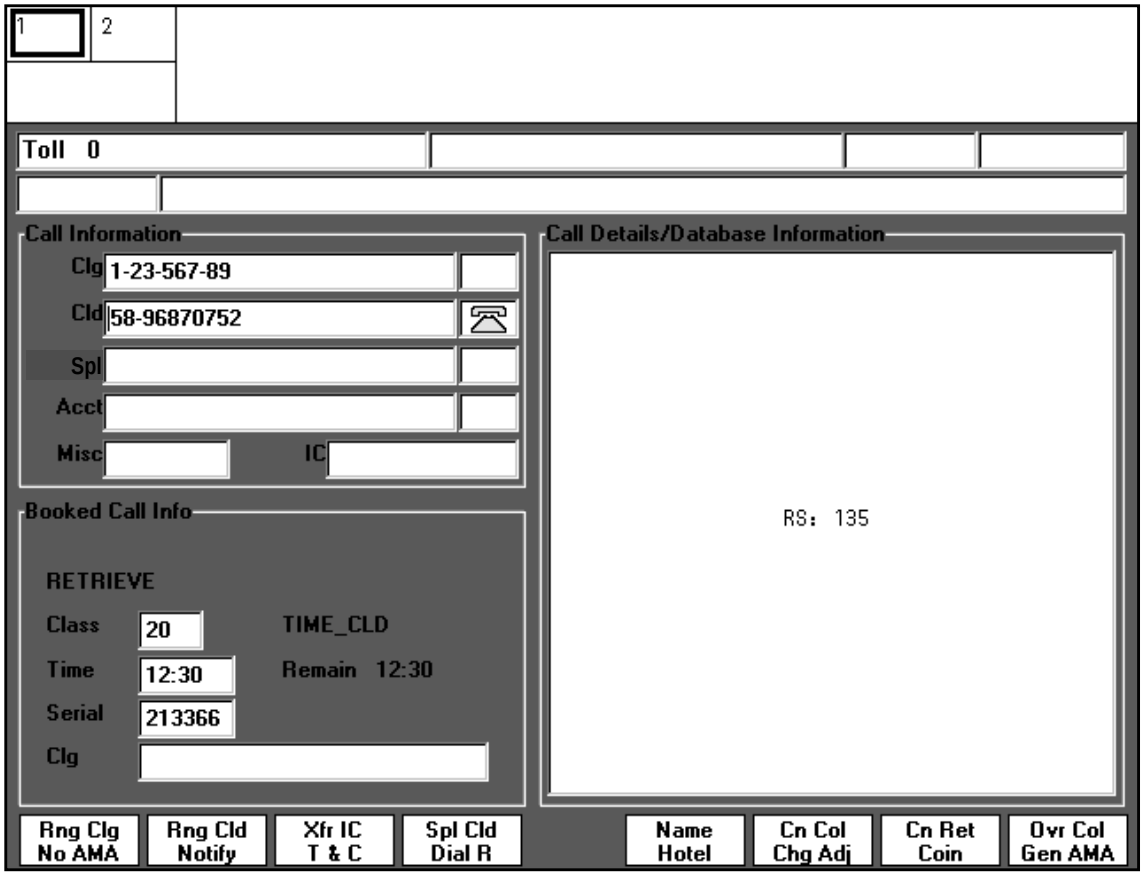


FIGURE 23. Status of a retrieved call

7.3.4.2.3 Call retrieval failure

Table 8 shows the reasons an attempt to retrieve a call from the internal booked call database may fail.

TABLE 8. Call retrieval failures

Call retrieval failure reasons	Error handling
Call currently being viewed by another operator	“Failed” in booked call action status field
No stored database calls against this calling number	“Failed” in booked call action status field, input displayed in error text color
No stored database calls against this serial number	“Failed” in booked call action status field, input displayed in error text color

7.3.4.3 Deleting a call

An operator can delete a call from the database that has been retrieved by pressing the **{Delete}** softkey. If the action is successful, “Delete” displays in the booked call action

field. Deletion removes the call information from the database, but the operator can still handle the call, in one of the following ways:

- Complete the call with the call information shown.
- Remove the call information of the deleted call by pressing the **{Clear}** softkey.
- Cancel the call and release it.

7.3.5 Connecting a recalled call

Once a call is at the position, the method of connecting the parties depends on datafill in DMS table IDBCLASS.

If both parties are reached, the call is completed. If both parties still cannot be reached, the call can be stored again in the booked call database for a later attempt.

7.4 Access to the IPS database

The Intelligent Service Node Provisioning System (IPS) database is provisioned with individually configured programs that contain customer-specific items such as billing restrictions and branding. The IWS can be configured (in file NTOAINI.INI) to query the IPS database automatically for information on calls that arrive from the Billing & Access Services system.

The Billing & Access Services system, version 1.05, provides capabilities for toll and assist such as 0– and 0+ (Automated Alternate Billing Service—AABS) automation. With IPS per-call search, customers can identify and provision various automation behaviors on a reseller basis. For example, a reseller (competitive local exchange carrier—cLEC or independent local exchange carrier—iLEC) on a switch with Billing & Access Services, version 1.05, can configure service nodes with capabilities such as independent billing restrictions, branding information, and sequence dialing.

When the operator has entered the called and billing numbers and the class charge, the IWS Billing application queries the IPS to learn if the call can be completed. If connectivity to the IPS is established, the IPS returns any restrictions or terminating brand information for display in area 3, under the default heading “Service Provider Information.” See Figure 24 for an example of this display.

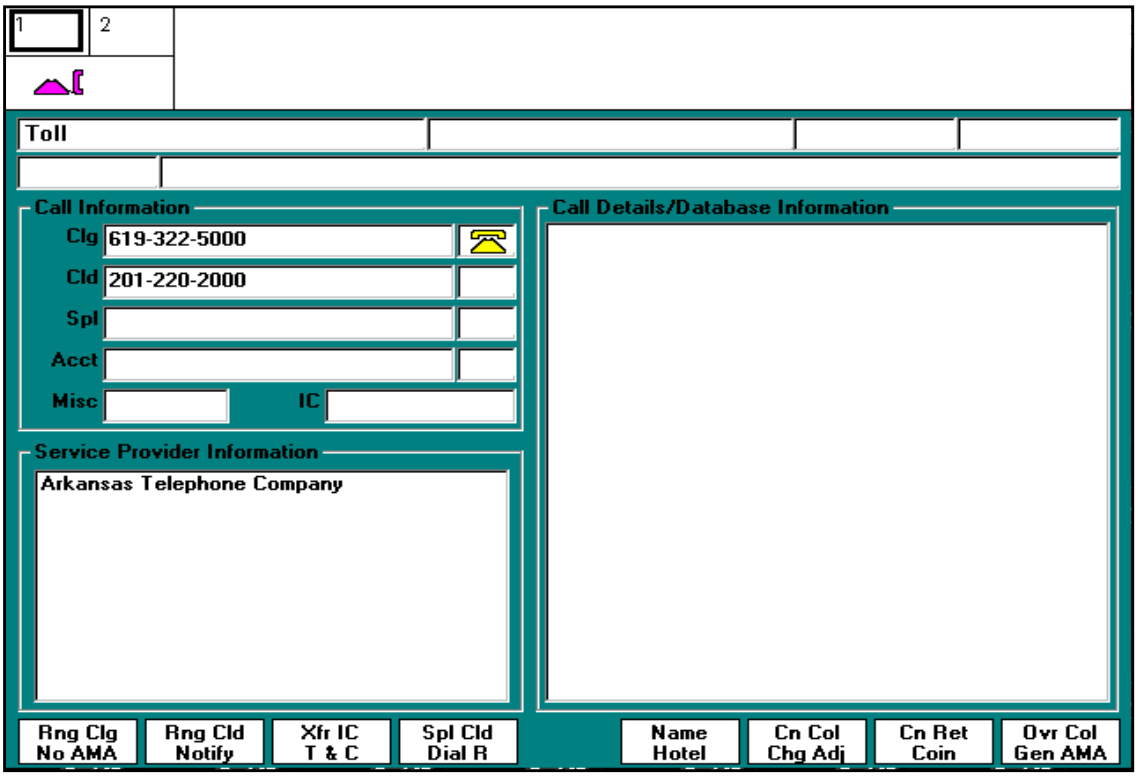


FIGURE 24. Sample display of the IWS Billing application connected to the IPS database

7.4.1 Program definition from call attributes

The service information for the call, such as allowed billing type and OSSAIN trigger setting, is derived from call parameters such as the following:

- originating phone class
- subscriber-dialed number (for example, 1-800)
- restricted billing index
- SPID
- language ID
- OSSAIN function ID

The information for branding text is derived from call parameters such as the following:

- originating phone class
- originating DN
- subscriber-dialed number (for example, 1-800)
- carrier identification code (CIC)
- SPID
- OSSAIN function ID

Branding text can be as long as 32 characters.

7.4.2 Restrictions

The IWS position does not receive all call attributes from the DMS switch, so certain programs supported by Billing & Access Services, version 1.05, cannot be supported. The following call attributes are not provided:

- non-Bell exchange carrier (NBEC) (but the SPID can be set for the call for each trunk group)
- originating line number screening (OLNS) foreign language ID (but this information is not required for operator position processing)

A program definition based on what is delivered to the position at call arrival contains the calling party station class, but the operator does not redefine the program if the calling party station class is changed by the operator during the during the call.

Enhanced calling card (ECC) is not currently supported as a Billing & Access Services, version 1.05, billing option.

If the IWS Billing application cannot establish a connection with either the IPS database or the CCDB, the IWS position functions with the basic toll and assist services provided by the TOPS DMS switch. In such a case no branding, restrictions, or enhanced calling card information and validation is available.

7.4.3 Connecting to the IPS database

Connectivity to the IPS is established by setting parameter DBConnected in file NTOAINI.INI. From the following list of options, select either “1=CCDB only connected” or “3=IPS only connected” to establish an IWS network connection with either the CCDB or the IPS. Option 2 “combination IPS and CCDB connected” is not currently available.

- 0=No database connected
- 1=CCDB only connected
- 2=combination IPS and CCDB connected
- 3=IPS only connected

See *TOPS IWS RAMP and Provisioning User’s Guide*, 297-2251-015, for an explanation of datafilling file NTOAINI.INI.

7.4.4 Database queries

During a database query, the clock icon appears in the MSA. No other keystrokes are accepted during the query, and the call cannot be released from the position.

If the operator changes a billing entry, the database is automatically queried again for updated information. If the billing type is not allowed, the operator sees a message to that effect in the MSA (see Figure 25), and cannot complete the call. The message string can be datafilled in file XDBERROR.TBL, using the provisioning tool (described in *TOPS IWS RAMP and Provisioning User’s Guide*, 297-2251-015). In the QMSCASE environment, a customer service expert with “Monitor” capability can override the restriction by pressing the **Ovr** (override) key.

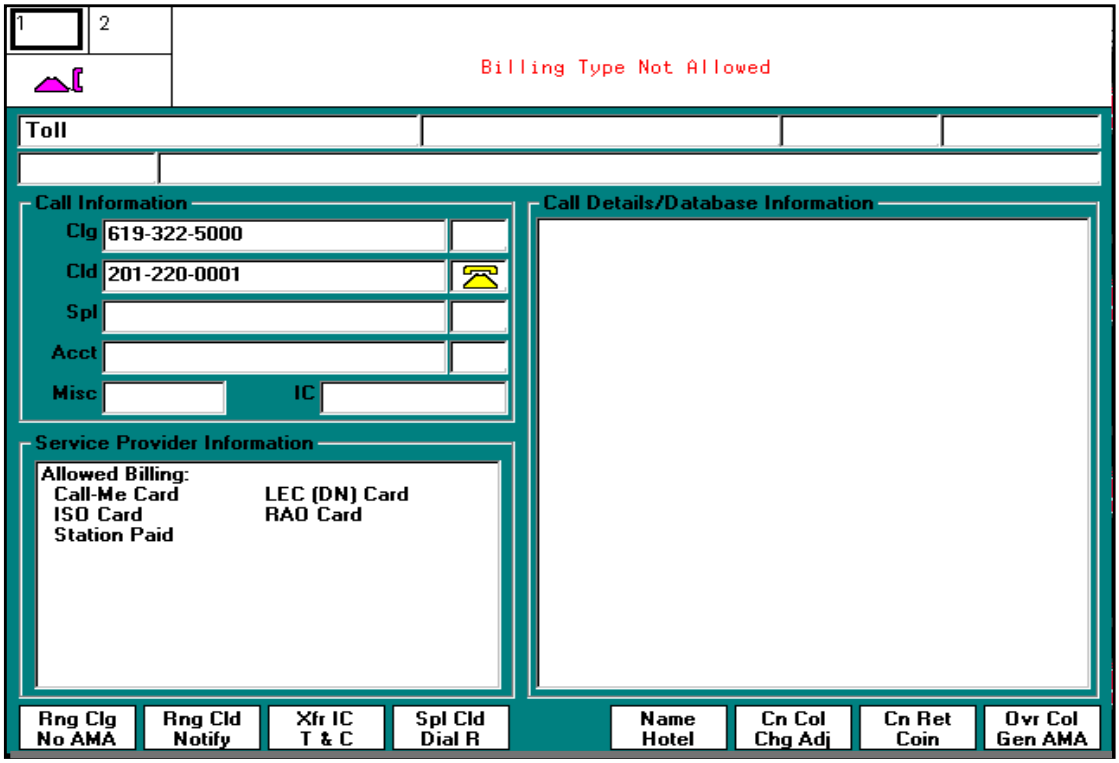


FIGURE 25. Billing not allowed message

7.4.5 Service provider messages

Service Provider Information string ID 40

The maximum length of this string is 35 characters. The heading can be datafilled in file PCCCINFO.LNG, using the provisioning tool (described in *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015).

The strings listed below are default displays; they can be provisioned in file DATABASE.LNG, using the provisioning tool.

Allowed Billing: string ID 27

The maximum length of this string is 25 characters. The presence of this string shows that the IWS Billing application is displaying reseller or service-provider billing options.

The following strings describe the allowed billing types. The maximum length of each string is 25 characters.

Collect	**string ID 28**
Third Party	**string ID 29**
Call-Me Card	**string ID 30**
LEC (DN) Card	**string ID 31**
ISO Card	**string ID 32**
RAO Card	**string ID 33**
Station Paid	**string ID 34**
None	**string ID 35**

7.5 Memo window (GOS environment)

The Memo window contains memo text, entered by the operator, that is associated with the current call. Figure 26 shows the Memo window in place in area 3.

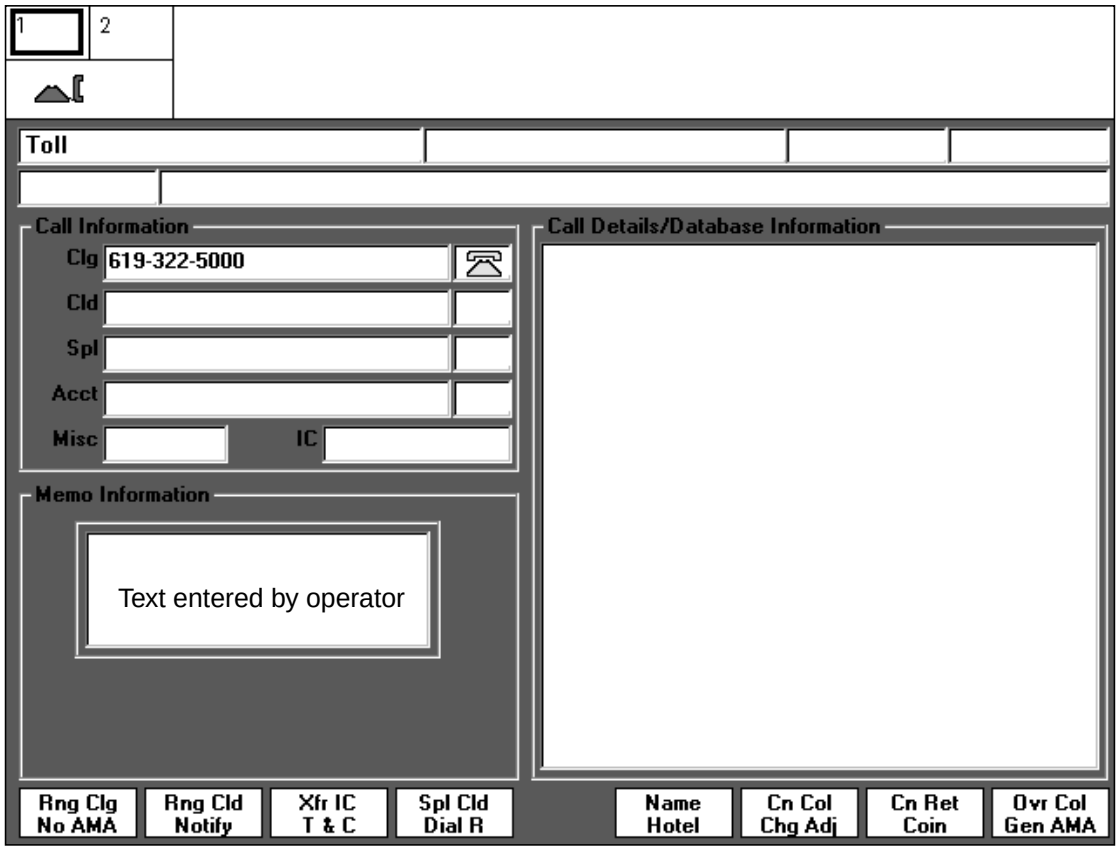


FIGURE 26. Memo window

The title for the Memo window, up to 35 characters, is datafilled in file PDCALLD.LNG. The **Memo** key must be datafilled using the KeyBind utility. Refer to *TOPS IWS RAMP*

and Provisioning User's Guide, 297-2251-015, for instructions on using the KeyBind utility. For a description of the **Memo** key, refer to "Miscellaneous call handling keys" on page 49.

The operator may display or create a memo (and display the Memo window) by pressing the **Memo** key. If a memo is already associated with the call, the current memo text is displayed in the Memo window. If a memo is not already associated with the call, then the Memo window is displayed with the cursor located in the upper left-hand corner awaiting text input. Data entry is limited to 64 characters. The destructive backspace, home, delete, and the right, left, up, and down arrow keys may all be used for editing. Once data has been entered, it is terminated with the **Start** key, sending the new memo to the DMS switch for validation. Once a memo has been validated, the call details memo field is displayed to indicate that a memo is associated with the call. For more information on the call details memo field, refer to Section 8.1.33 on page 91.

7.5.1 Editing in the memo window

After a memo has been created and validated, the operator has several editing options.

To display the memo window, the operator presses the **Memo** key once.

To edit a displayed memo, the operator presses **Memo** a second time to place the Memo window in edit mode and the cursor at the end of the existing memo.

To clear a displayed memo, the operator presses **Memo** while in edit mode. This clears out the Memo window contents and places the cursor in the upper left corner of the window. Pressing **Start** at this point clears the memo text associated with the call and removes the memo from the call details memo field.

To replace an existing memo, the operator presses **Memo** while in edit mode to clear the memo screen. Now instead of pressing **Start**, the operator enters the new memo text and then presses **Start**. This sends the new memo to the DMS switch for validation.

Note that the Memo window, once displayed, remains visible until the end of the call, unless overlaid by other IWS Billing area #3 information (such as violated restrictions, booked call information, or estimate of charges). At any time, the operator can cause the memo text to be redisplayed by pressing **Memo**.

If the operator presses a call information area cursor control key at any time during a memo entry or editing session, all editing changes are discarded. Any previous memo text is re-displayed in the Memo window. For more information on the call information area cursor control keys, see section "Call information area cursor control keys" on page 46.

8.0 Area 4: call details

The call details fields in area 4 display the details associated with a call for a service provided by the IWS Billing application. Specific details are displayed in specific fields, which are discussed below.

8.1 Call details fields

In the discussion that follows, each field relating to call details is discussed in terms of the text that may be displayed in it. When the DMS switch instructs the position that information displayed in a field has changed, the field display changes. The call details fields are considered an extension of the call information fields.

Monetary values displayed in the call details fields are formatted using information provided in file MPXPARM.INI. If the currency information in file MPXPARM.INI is out of range or invalid or file MPXPARM.INI cannot be found during initialization, the following default values are used:

- The monetary symbol is displayed prior to the currency string.
- The monetary separator is displayed with two digits to the right in the currency string.
- The monetary separator is a decimal point (.).
- The monetary symbol is a dollar sign ($).

For currency information datafilled in file MPXPARM.INI, refer to *TOPS IWS Base Platform User's Guide*, 297-2251-010.

The font used in the call details fields is IWSWinLatin1Fixed (formerly named MPXFixedFont), a fixed-width font.

Text strings for the fields described in this section are in file PDCALLD.LNG, which is detailed in chapter "Data schema" in this document. The placement of each of the call details fields is shown in Figure 27.

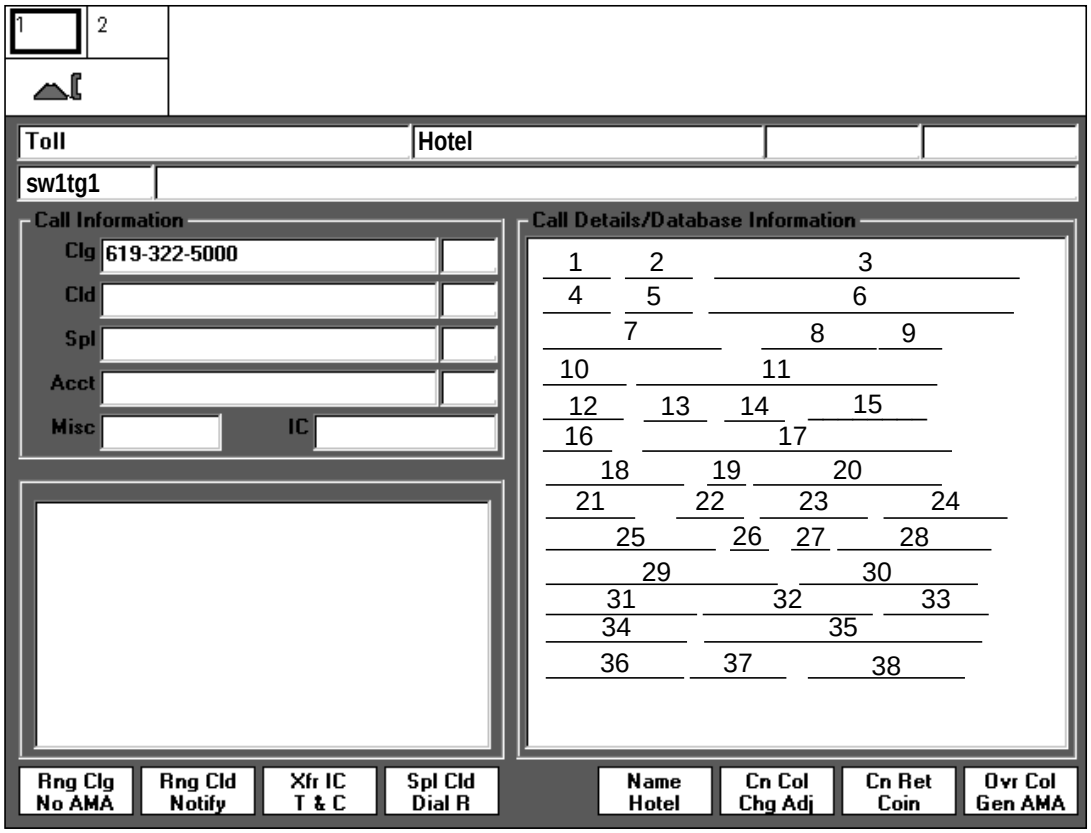


FIGURE 27. Call details fields

8.1.1 Calling Information: field 1

The following strings display additional information about the calling directory number. The maximum string length of each label is three characters.

RES **string ID 0043**

The calling number is restricted from making an inter-LATA call.

NEA **string ID 0042**

The incoming call is from a Non-Equal Access End Office (Non-EAEO).

8.1.2 Calling party language: field 2

L: **string ID 0073**

Field 2 displays the language of the calling party. The language names are datafilled in file XLANG.TBL, which is described in *TOPS IWS Base Platform User's Guide*, 297-2251-010.

8.1.3 A-Name: field 3 (Global Operator Services environment [GOS])

Field 3 displays the calling, or "A" name. The field is aligned with the calling number field in the call information area, and the calling information and calling party language fields in the call details area. Up to 32 characters may be displayed in this field.

If the calling name displayed is valid, the string is displayed in the position's normal text color. If the calling name displayed is invalid, the string is displayed in the position's error text color.

8.1.4 Called Information: field 4

Field 4 displays additional information, received from the DMS switch, about the called directory number. The labels described below (up to five characters each) appear in the same color as the data in the associated called data entry field (field 6) in the call information area.

IC **string ID 0044**

An inter-LATA carrier is associated with the call. The label may be displayed in the error text color with a "**?**" appended to indicate an attempt is being made to release the call without an inter-LATA carrier number when one is needed.

Int'l **string ID 0045**

The called number is international.

Loc **string ID 0046**

The called number is local.

Srv **string ID 0047**

The call is to a service number such as the fire department, phone company, or poison control.

VCA **string ID 0048**

An attempt is being made to place a call to a vacant code. When the label displays in the error text color with a "**?**" appended, an attempt is being made to release the call to a vacant code.

UCA **string ID 0049**

An attempt is being made to place a call to a special collect number with an unauthorized Centralized Automatic Message Accounting (CAMA) code. When the label displays in the error text color with a "**?**" appended, an attempt is being made to release the call with an unauthorized CAMA code.

Req **string ID 0050**

The label indicates a requested number.

MAN **string ID 0051**

The called number is associated with service number routing.

Res **string ID 0052**

Screening restrictions apply on the called number.

Acc **string ID 0053**

Collect billing is accepted automatically.

Vfy **string ID 0054**

Identifies a busy line verification attempt (up to five characters).

Deny (GOS environment) **string ID 0077**

The DMS switch has screened a called number and found its status to be blocked or unpaid. DN screening is imposed on domestic called numbers (not overseas or third number calls) that are datafilled in DMS table DNSCRN for specific restrictive attributes identified by the DMS switch. The operator can complete or deny the call if he or she keys the called number and presses **Rls Cld**. If the operator outpulses to the called party, however, the call is completed regardless of the DN screening restrictions noted by the DMS switch. The DMS switch returns the number formatted whether or not the call is denied.

Note that the DN screening feature requires an APC100/TOPS combo switch.

8.1.5 Called party language: field 5

L: **string ID 0073**

Field 5 displays the language of the called party. The language names are datafilled in file XLANG.TBL, which is described in *TOPS IWS Base Platform User's Guide*, 297-2251-010.

8.1.6 B-Name: field 6 (GOS environment)

Field 6 displays the called, or "B" name. The field is aligned with the called number field in the call information area, and the called information and called party language fields in the call details area. Up to 32 characters may be displayed in this field.

If the called name displayed is valid, the string is displayed in the position's normal text color. If the called name displayed is invalid, the string is displayed in the position's error text color.

8.1.7 Special Information: field 7

Field 7 displays additional information about third, special, or calling card number displays. The labels display in the same color as data in the associated special data entry field (field 7) in the call information area. Multiple strings may be displayed simultaneously, so some of these may be concatenated. Each of the following labels can be as long as 17 characters unless specifically noted.

Hot **string ID 0055**

A special number is identified as hot listed or involved in high fraud incidence; the label (up to five characters) displays in the alert text color.

Man **string ID 0056**

The operator must intervene manually to validate a special number for an inter-LATA call. The label can be up to five characters.

Res **string ID 0057**

Screening restrictions apply on a special number. The label can be up to five characters.

Vfy **string ID 0058**

The operator must intervene manually to validate a special number for an intra-LATA call. The label can be up to five characters.

RPIN **string ID 0059**

The non-enhanced calling card personal identification number (PIN) is restricted; the digits (up to five characters) appear in the error text color.

Acc **string ID 0060**

The LIDB (line information database) query for a special number is automatically accepted. The label can be up to five characters.

<xxx>

The digits shown (xxx) represent the revenue accounting office (RAO) number received from the DMS switch.

ResIC **string ID 0061**

The non-enhanced card holder is trying to complete a call on one inter-exchange carrier using a calling card restricted to another inter-exchange carrier or restricted from any inter-exchange carrier; the label is in the alert text color.

LIDB Srv Den **string ID 0062**

The non-enhanced calling card number is rejected in a LIDB query; the label is in the error text color.

LIDB PIN Pay **string ID 0063**

The non-enhanced calling card is rejected for non-payment associated with the PIN; the label is in the error text color.

LIDB PIN Res **string ID 0064**

The non-enhanced calling card is rejected for a restriction either on the type of call or the service attempted; the label is in the error text color.

LIDB PIN Thr **string ID 0065**

The non-enhanced calling card is rejected for exceeding the threshold of invalid PIN attempts; the label is in the error text color.

NoMHA **string ID 0074**

The calling card is rejected because the service provider does not have a mutual honoring agreement with the inter-LATA carrier; other arrangements must be made for billing.

8.1.7.1 Concatenated displays in the Special field

In several of the cases listed above, the primary strings may be concatenated to indicate other information about a calling card. These strings may total up to 17 characters in length.

<xxx> RPIN

In normal text color, this string indicates that the calling card and RAO codes are valid and the PIN is restricted.

In the error text color, this string indicates that the calling card is invalid, the RAO is valid, and the PIN is restricted but not masked.

Res <xxx>
In the alert text color, this string indicates that screening restrictions apply, the RAO is valid, and the PIN is masked.

Res <xxx> RPIN
In the alert text color, this string indicates that screening restrictions apply, the RAO is valid, and the PIN is masked and restricted.

8.1.8 Minutes: field 8

Min: **string ID 0025**
The label displays in minutes and seconds the amount of time accrued in a specific period for a call. The label can be up to 4 characters; the text string ("<minutes>:<seconds>") can be up to 12 characters.

The label can also indicate completion of a nonstandard notify time period requested by a subscriber on a non-coin call.

8.1.9 Dial: field 9

Dial **string ID 0038**
The label (up to five characters) shows that dial rate billing applies to the call.

8.1.10 Time and Charges: field 10

T&C **string ID 0035**
The operator requests time and charge information to be quoted to the billing party. The label can be up to three characters.

8.1.11 Calling Line Identifier: field 11

CLI **string ID 0066**
If the calling number differs from the billing number, the calling line identifier appears (up to three characters for the label and 28 characters for the information).

8.1.12 Inter-LATA Carrier Information Transfer: field 12

The following labels (up to seven characters) show information about an inter-LATA carrier (IC) transfer.

Xfr Err **string ID 0039**
The IC transfer requested by the card holder failed because the DMS switch does not recognize the carrier, or the card holder is not allowed to transfer IC.

Xfr IC **string ID 0040**

The associated carrier services are not available from the service provider, so the call must be transferred to an IC.

8.1.13 Inter-LATA Carrier Information: field 13

No Rate **string ID 0067**

The label (up to seven characters) indicates the rating requested is not allowed for the specified IC.

8.1.14 Notify: field 14

Nfy: **string ID 0027**

The label appears with "<minutes>" to show either a notify interval keyed by the operator or a system default interval for coin calls; when the label is in the error text color, the notify interval is invalid. The label can be up to four characters, with up to three characters following.

Mtd Nfy: **string ID 0028**

The label appears with "<minutes>" and "<recall count>" to show a muted notify interval keyed by the operator with the number of times the call has been returned to an operator. The text "<recall count>" is a display that is enabled or disabled by datafill in the DMS switch. When either of the labels is in the error text color, the notify interval is invalid. The maximum string length is eight characters.

8.1.15 Trunk group/SPID priority 2: field 15

Field 15 displays the trunk group name or service provider identification (SPID) at call arrival. Field 15 can display a maximum of eight characters. The SPID information is from the DMS switch, and the trunk group information is from file XTGDSPL.TBL, discussed in *TOPS IWS Base Platform User's Guide,* 297-2251-010.

To send both displays to the position, parameter DisplayBoth in IWS file MPXPARM.INI and parameter OPP_ALWAYS_SEND_SPID_INFO in DMS table TOPSPARM must be turned on. Using the provisioning tool, select File, New, MPXPARM, and Trunk Group/SPID. Check the box in the popup window to "Display both Trunk Group and SPID."

If both the SPID and the trunk group are sent to the IWS position, the display in the call headlines window appears based on the priority datafilled in file MPXPARM.INI. Select either trunk group or SPID in the popup window mentioned in the preceding paragraph. The piece of information NOT selected displays in the call details area, and the piece selected displays in the call headlines area. (See section 3.5 on page 27.)

The provisioning tool is discussed in *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

8.1.16 ACTS information: field 16

Field 16 displays Automatic Coin Toll Service (ACTS) information. Each of the following labels can be up to seven characters.

ACTS **string ID 0029**
The called position is eligible for ACTS.

ACTS!! **string ID 0030**
A resource failure is suspected during ACTS handling; the label is in the alert text color.

8.1.17 Amount Due: field 17

Field 17 displays the amount of money to be deposited by the caller. The label can be up to eight characters, with 20 characters following.

Amt Due: **string ID 0031**
The label displays with "**ACTS"** in the ACTS Information field and "<amount>" in the Amount Due field to identify the amount left to be deposited by the subscriber.

The label displays with "**ACTS!!"** in the ACTS Information field and "<amount>" in the Amount Due field to indicate a failure occurred on a call that is normally handled entirely by ACTS.

8.1.18 Overtime Type: field 18

Field 18 displays the type of overtime charged to a call.

OT Type: **string ID 0032**
The label (up to eight characters) displays with one of the following strings (up to four characters) to show how the overtime call is charged to a coin phone.

PRE **string ID 0033**
Charges for the overtime period must be collected before the period begins.

POST **string ID 0034**
Charges for the overtime period can be collected after the overtime period.

8.1.19 Person Call Back: field 19

PCB **string ID 0036**
Field 19 displays a label of up to four characters that identifies a person call-back call.

8.1.20 Rate Step: field 20

RS: **string ID 0037**

Field 20 displays a label of up to three characters with "<rate step>" (up to six characters of text) to show the rate step in effect for a call. The label is in the alert text color to show a missing rate step; the label and text are in the error text color to show an invalid rate step.

8.1.21 Overcollect: field 21

OC: **string ID 0026**

Field 21 displays a label with "<amount>" to show the amount of money collected above the amount owed for a specified time period. For an invalid overcollect, the label appears in the error text color. The label can be up to three characters; the text string can be up to five characters.

8.1.22 CT4Q Confirmation: field 22

Field 22 can contain up to nine characters indicating that the agent is assigning a new call type for queuing (CT4Q). Datafill in this field is found in file XCT4Q.TBL, which is described in *TOPS IWS Base Platform User's Guide,* 297-2251-010.

8.1.23 Fixed Duration: field 23 (GOS environment)

Fixed Dur **string ID 0041**

Field 23 displays a string of up to nine characters to indicate a call is marked by the DMS switch as a fixed duration call. This string displays only for international calls.

8.1.24 Transient: field 24

Field 24 displays system information for approximately three seconds. A label such as the example shown below can be as long as 15 characters.

PCB Error **string ID 0014**

The operator has selected the person call back (PCB) function but the call is not billed person paid or person special.

Start CLG TBI **string ID 0015**

The DMS switch tried to send the toll break-in signal to the calling party line.

Stop CLG TBI **string ID 0016**

The DMS switch tried to break the connection on the calling line that was created by the toll break-in.

Start CLD TBI **string ID 0017**

The DMS switch tried to send the toll break-in signal to the called party line.

Stop CLD TBI **string ID 0018**

The DMS switch tried to break the connection on the called line that was created by the toll break-in.

8.1.25 Country Direct: field 25

Direct: **string ID 0068**

Field 25 displays a label of up to 16 characters with "<country>" to show the country of call origin on a country direct call. File XCTRYDIR.TBL, which is described in detail in *TOPS IWS Base Platform User's Guide*, 297-2251-010, is datafilled by the customer with the appropriate country names.

8.1.26 Text: field 26

N **string ID 0070**

Field 26 displays hotel guest name text. The label can be a maximum of one character and the text can be up to four characters. (The total for the string is six characters.) If the text is invalid, the text appears in the error text color.

8.1.27 Xfr: field 27

Xfr **string ID 0069**

Field 27 indicates that a transfer to the operator has occurred. The label can be up to three characters.

8.1.28 Static: field 28

Field 28 displays information that remains visible until the end of a call or until the DMS switch sends a new transmission. Each of the following labels can be as long as 15 characters.

Start Tmg **string ID 0001**

Timing has been started.

Cancel Tmg **string ID 0002**

Timing has been canceled.

Handoff **string ID 0003**

The call will be handed off to the Automated Alternate Billing Service (AABS) at position release. This label applies only to AABS, not to Billing and Access Services calls.

Handoff?? **string ID 0004**

The call fails checks by the DMS switch for handoff to AABS; the label is displayed in the error text color. This label applies only to AABS, not to Billing and Access Services calls.

No Handoff **string ID 0005**

A resource failure occurs on an attempt to handoff to AABS; the label appears in the alert text color. This label applies only to AABS, not to Billing and Access Services calls.

Print T&C **string ID 0006**

The operator signals the DMS switch to generate a hard copy of time and charges.

Query Fail **string ID 0007**

A line information database (LIDB) verification request fails for a non-enhanced calling card, called number, or third number; the label appears in the alert text color.

Rating Query Fl **string ID 0008**

The external rating query failed. The string is displayed in the error text color.

Rating Not Att. **string ID 0009**

The external rating was not attempted, because of network congestion. The string is displayed in the alert text color.

8.1.29 Country name/LNP status: field 29

Field 29 displays the name of the country (up to 25 characters) of the called party. The country names are datafilled in file XCDFA.TBL, which is described in *TOPS IWS Base Platform User's Guide,* 297-2251-010.

The country field can also be used by the local number portability (LNP) status display. When an operator uses the LNP functions, field 29 displays LNP status. The LNP status display is a label combined with the portability status of a DN (calling, called, special). The label can be up to eight characters.

CLDLNP: **string ID 0078**

CLGLNP: **string ID 0079**

SPLLNP: **string ID 0080**

When a DN is not ported, the following displays:

notported **string ID 0081**

Other portability status displays are the actual local routing number (LRN), which consists of a 12-character display, or a question mark display, which indicates unknown portability status. The LNP status display can be up to 19 characters.

8.1.30 International INW/DA: field 30 (GOS environment)

The text in field 30 indicates that the operator has requested foreign assistance. The maximum string length of this field is 13 characters. The following messages can be displayed in this field.

Int'l: DA **string ID 0085**

Indicates the DMS switch response to the foreign directory assistance (DA) that was requested by the operator.

Int'l: DA?? **string ID 0086**

Indicates an invalid request for foreign DA was issued by the operator. The string is displayed in the error text color.

Int'l: DA!! **string ID 0087**

Indicates that a city code is required for foreign DA. The string is displayed in the alert text color.

Int'l: INW **string ID 0088**

Indicates the DMS switch response to a foreign inwards call that was requested by the operator.

Int'l: INW?? **string ID 0089**

Indicates an invalid request for a foreign inwards call was issued by the operator. The string is displayed in the error text color.

Int'l: INW!! **string ID 0090**

Indicates that a city code is required for a foreign inwards call. The string is displayed in the alert text color.

8.1.31 Charge adjust: field 31

ChgAdj: **string ID 0072**

Field 31 displays charge adjust information. Charge adjust indicators interpret the charge adjust code in terms of money (using local currency), minutes, or number of calls that are credited. The three charge adjust indicators are provided in file MPXPARM.INI.

The label can be up to 7 characters, and the text can be up to 17 characters. (The total for the string is 25 characters.) When "ChgAdj: <type> <hh:mm> <indicator> <amount>" appears in the error text color, the charge adjustment is invalid. Refer to the *TOPS IWS Base Platform User's Guide*, 297-2251-010, for charge adjust indicator information datafilled in file MPXPARM.INI.

8.1.32 Trouble: field 32

Trbl: **string ID 0071**

Field 32 displays a trouble code. The DMS switch returns the code entered by the operator from the trouble menu. When the label and text appear in the error text color, the trouble code is invalid. The label can be up to five characters, and the text can be up to two characters. (The total for the string is eight characters.)

8.1.33 Memo: field 33 (GOS environment)

Memo **string ID 0083**

Field 33 relays a message notifying the operator that a memo is associated with the call currently at the position. The operator may then press the designated **Memo** key, which displays a window containing memo text associated with the call. The memo display key must be datafilled in file XKBOARD.TBL. The maximum string length in this field is six characters.

8.1.34 Charge: field 34

Chg: **string ID 0000**

The maximum length of the charge label is four characters. If the label appears in the error text color, the charge amount displayed is invalid. When the label displays in conjunction with "<amount>," the text (up to 19 characters) shows the amount owed for calls such as a coin sent paid call or a call held on loop with time and charges.

8.1.35 Ticket number: field 35 (GOS environment)

The text in field 35 displays the ticket number information associated with the current call. The maximum length of the ticket label is eight characters, for a total display of up to 20 characters.

Ticket: **string ID 0084**

The ticket number displayed with the ticket label may consist of the following two formats:

AAADDXXXXXX or DDXXXXXX

where

AAA	represents the transit code
DD	represents the day
XXXXXX	represents the digits of the ticket number

If the ticket number displayed is valid, the string is displayed in the position's normal text color. If the ticket number displayed is invalid, the string is displayed in the error text color.

8.1.36 OLNS restrictions: field 36

Rst: **string ID 0075**

Field 36 displays information about the originating line number restrictions in an eight-character text string. The label, up to four characters, is datafilled in file PDCALLD.LNG, which is detailed in the chapter "Data schema" in this document. The string length totals 13 characters (including one space).

8.1.37 OLNS text: field 37

Txt: **string ID 0076**

Field 37 displays additional information from the DMS switch about the originating line. The label (which can be datafilled in file PDCALLD.LNG) can be up to four characters, and the text string can be up to eight characters. The string length totals 13 characters (including one space).

8.1.38 Alternate route: field 38 (GOS environment)

Alt Rte: **string ID 0082**

Field 38 displays a possible alternate route for connecting to an international destination when a connection using a direct route cannot be made. The text for this field is contained in file XALTRTE.TBL. The string length of the alternate route label is eight characters, and the maximum string length for an alternate route name is 3 characters, for a total of up to 12 characters.

9.0 Scripting utility

IWS Billing Application (NTOA) supports two forms of scripting: the original (standard) scripting utility and enhanced scripting. Nortel Networks recommends enhanced scripting for IWS version 17.1 and higher. Support for standard scripting is only provided for backwards compatibility.

9.1 Standard scripting

The scripting utility provides a text area (scripting window) on the screen to display a title and a message with information for the operator based one of the following:

- CCDB reason code
- SPID
- CT4Q
- call origination type

The default location of the scripting window is area 3. Location and size of the scripting window can be datafilled in file SCRPTINI.INI.

Figure 28 shows a typical script title and message that the operator can view at call arrival.

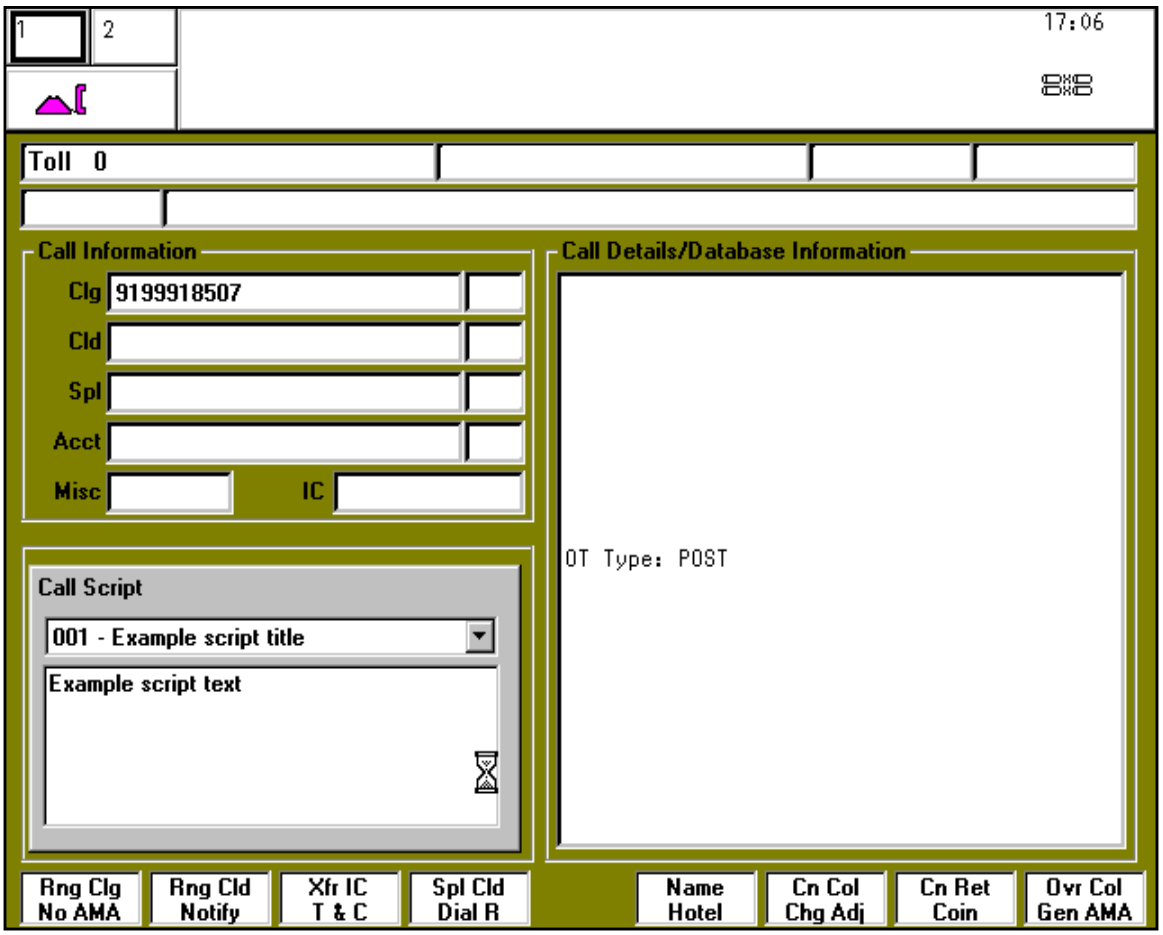


FIGURE 28. Sample scripting window at call arrival

Note: In this document, the term “scripting window” is a general reference to the area labeled “Call Script” in area 3 as shown above.

File SCRIPTINI.INI can also be datafilled to allow the scripting window to display at call arrival without automatically receiving keyboard focus. (Note that in Figure 28 the title bar of the scripting window is grayed out indicating that the scripting window does not have keyboard focus.) When the scripting window not have focus, this reduces the number of keystrokes required from the operator. The scripting window automatically displays at call arrival, but the IWS Billing Application window has focus, with the cursor automatically placed in the appropriate IWS Billing Application field, ready for the operator to begin handling the call.

The advantage of this option is that no extra keystroke is required to shift focus to a data entry field in the IWS Billing Application window. The scripting window is completely visible, but not active, so the operator can quickly check its contents and then proceed without delay to the appropriate call handling keystrokes. For example, on a zero minus call, cursor placement defaults to the Cld field; on a zero plus call, cursor placement defaults to the Spl field.

This functionality is enabled or disabled by the parameter GiveScrptFocusOnArrival in file SCRIPTINI.INI. By default, this parameter is set such the scripting window does not automatically get focus ar call arrival.

At any time during the toll call, the operator can press the **Script Window Display** key to give the scripting window focus and then use the arrow keys to sort through scripts and select different ones to appear in the call script window. While the scripting window has focus, most key actions still work just as they would as if it did not have focus. (For keys like **Cld** that change the keyboard focus, pressing them changes focus to the appropriate field in the IWS Billing application window.) For detailed information on how to use the scripting window, refer to *TOPS IWS Base HMI Application Guide*, 297-2251-013.

If it becomes necessary to remove the scripting window manually, the operator can press the **Script Window Display** key to give keyboard focus to the script window, and then press **Start** to remove the window.

The **Script Window Display** key also allows the operator to view the scripting window when the window is not configured to automatically appear at call arrival. Location of the **Script Window Display** key on the keyboard is customer datafillable. For information on datafilling key actions, refer to *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015. For a description of file SCRPTINI.INI, refer to *TOPS IWS Base HMI Application Guide*, 297-2251-013.

9.1.1 Scripting window triggers

Note: This section only applied to standard scripting. See section 9.2 on page 96 for similar information regarding enhanced scripting.

The script title and message text box can be datafilled with information corresponding to the following attributes:

- CCDB reason code (from a service node, not from ServiceBuilder)
- SPID
- CT4Q
- call origination type

The application uses one of the above call parameters to determine which script message to display at call arrival. The script displayed is based on call arrival information received from the DMS switch and has the following default priority order:

1. CCDB reason code
2. SPID
3. CT4Q
4. call origination type to display

The priority order can be changed in the datafill file SCRIPTINI.INI. When no script is associated with an attribute in the priority level, the scripting window displays the script associated with the attribute in the next priority level.

The following are the IWS table files that associate a script ID with a call parameter:

- Reason code – XRCXSC.TBL

- SPID – XSPIDXSC.TBL (Note: The SPIDs in this table must correspond to the SPIDs datafilled in DMS table SPID.)
- CT4Q – XCT4QXSC.TBL
- Call origination type – XCORGXSC.TBL

After determining which script ID is appropriate for the call, the application refers to the value in the “Enable” entry for the IWS Billing application in file SCRPTINI.INI. If the “Enable” entry is 0 (the default), the scripting window is not automatically displayed at call arrival. If the “Enable” entry is 1, the scripting window is automatically displayed.

More information relating to the preceding table files can be found in the following areas:

- XCT4QXSC.TBL and XCORGXSC.TBL in *TOPS IWS Base Platform User’s Guide*, 297-2251-010
- XRCXSC.TBL and XSPIDXSC.TBL in chapter “Data schema” in this document

Information relating to script titles, script messages, and file SCRPTSCR.SCR can be found in *TOPS IWS Base HMI Application Guide*, 297-2251-013

9.2 Enhanced scripting

Enhanced IWS scripting provides the capability to use various call parameters to drive the IWS script window display. The window size and placement for each application is datafillable as with standard scripting. Thus, the scripting window appearance has not changed, just how the contents of the script window are determined.

IWS scripting capabilities are enhanced so that various call parameters can be used to drive the IWS script window display. Any combination of the following call parameters can be used to determine the script message:

- switch ID
- service ID
- call origination type
- call type for queuing (CT4Q)
- service provider identifier (SPID)
- trunk group display index
- billing restriction number
- OLNS restrictions number
- OLNS equipment number

Enhanced scripting does not use the same cross reference files as standard scripting. Instead, enhanced scripting uses SCRPTINI.INI file, SCRPTCR.SCR file, and a new cross generic reference file, e.g. XSCRULES.TBL.

For additional information on enhanced scripting, please refer to *TOPS IWS Base HMI Application Guide*, 297-2251-013.

10.0 Message/status area

The message/status area (MSA), shown in Figure 29, is used to relay system-, service-, and application-specific information to the operator. The MSA is composed of a text display area, two loop information blocks, and a port status information block. The IWS Billing application uses the display library to display its own messages and generic call information in the MSA. This area cannot be overlaid by any other windows.

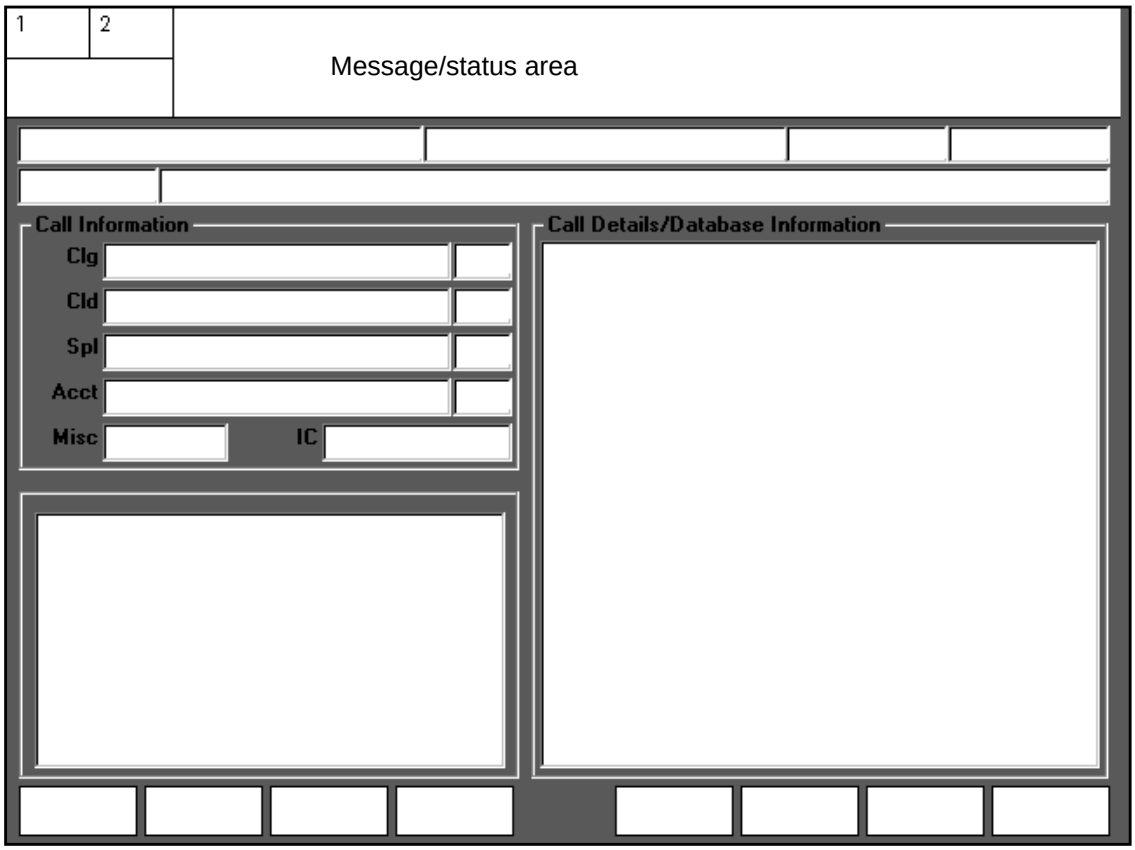


Figure 29. Message/status area

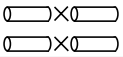
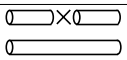
The text display area has four lines for displaying text strings that provide information to the operator. Each line is subdivided into several display fields. Each field displays a specific type of message. To the left of the text display area are two loop information blocks and the port status information block. These blocks provide information on the state of the two loops and the calling and called ports.

For detailed information on the display library and the MSA, refer to *TOPS IWS Base HMI Application Guide*, 297-2251-013.

10.1 Icon displays

Table 9 shows the icons shown displayed in the MSA.

Table 9. Icon displays in the MSA

Icon name	Icon	Meaning (location)
handoff		The call has been handed off and can be handed off again. (This icon applies only to AABS, not to Billing and Access Services calls.)
no handoff		The maximum number of handoffs for this call has been reached. (This icon applies to both AABS and Billing and Access Services calls.)
not branded		The call has not been branded by an automated system before arriving at the position. The operator must recite the service provider's standard announcement. (DMS switch datafill determines when and if this icon displays.)
branded		The call has been branded by an automated system before arriving at the position. The operator is not required to recite the service provider's standard announcement.
clock		A database query is running. The clock disappears at the end of the query.
envelope		A voice mail message is waiting for the card holder. After the calling card number and PIN are validated in the CCDB, the icon appears and the operator informs the card holder that a message is waiting.
no CCDB	No CCDB	The database (db) application is down. (If one link is down and the db application is down, "No CCDB" appears. If both links are down and the db application is down, the links down icon appears.)
links down		Both links to the CCDB are down.
link down		A link to the CCDB is down.
no automation		This call has not gone to any automated service but has gone directly to an operator and cannot be released to an automated service.

10.2 Time field displays

Table 10 shows the displays in the time field, located at the upper right corner of the MSA.

Table 10. Time field displays in MSA

Display name	Display	Description
DMS time	9:44:57	Displays the current frozen DMS switch time.
Stopwatch	00:00:24	Displays a time counter as a stopwatch.
Customizable clock	13:16	Displays local time in hours and minutes.When datafilled as a display choice, it displays between operator logon and logoff and when no other time-related functions occupy this field.
Call timer	00:06	Displays the amount of time being used to process the current call. The display color changes when the time threshold is exceeded. When datafilled as a display choice, it shows the duration of a call in minutes and seconds.

10.3 Error text

Files XDBERROR.TBL and PCCCINFO.LNG, which are detailed in Chapter 13.0, "Data schema," are datafilled with text describing various errors (for example, errors from the CCDB), and the text is displayed in the MSA. The text is displayed in the error text color.

One example of text displayed is the result of a failed acknowledgment from the CCDB. The IWS Billing application sends periodic audit messages to the CCDB. In most cases, the database application acknowledges the message. If the message is not acknowledged, however, the database application is down and "No CCDB" displays in the same area of the MSA that shows the links-down icon. The timing parameters for the audit and acknowledgment are datafilled in file NTOAINI.INI, which is discussed in Chapter 13.0, "Data schema."

10.4 Reason codes

Reason codes display in application field I in the MSA. Each code is related to a problem beginning in a node external to the IWS.

10.4.1 Service node reason codes

When a problem originating in a service node comes to the IWS, it displays in the MSA as either a string of digits or a short phrase. A short phrase displays if the corresponding number has been datafilled in file XDBERROR.TBL, which is described in Chapter 13.0, "Data schema." If the number and its corresponding phrase are not datafilled in file XDBERROR.TBL, the operator can correlate the number with its explanation in either *Enhanced Calling Card Calling Card Service Node (CCSN) Administration Guid*e, 203-3201-301, or *Billing and Access Services Administration Guide*, 203-3261-301.

10.4.2 ServiceBuilder reason codes (GOS environment)

In the GOS environment, if a ServiceBuilder intelligent node (IN) routes a call to an operator for any reason, the service type and reason code for that call display in error text color in application field I. The service node reason code can always be distinguished from the ServiceBuilder reason code by the presence of a dash (-) before the ServiceBuilder reason code, as shown in Figure 30.

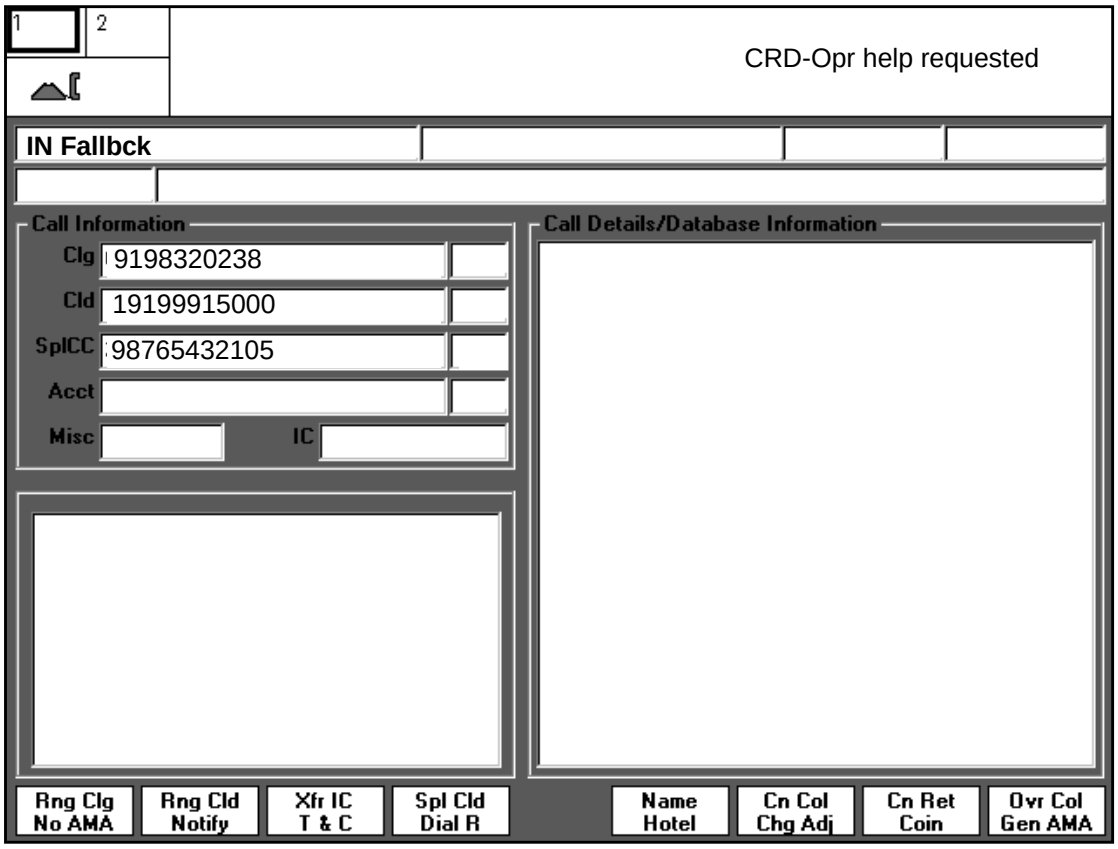


Figure 30. Service type and reason code explanation for IN fallback call

The service type, which can be as long as three characters, identifies the service that was handling the call at the IN when operator intervention became necessary. The service type must be datafilled in file XINFBSVC.TBL (described in Chapter 13.0, "Data schema"), or a question mark (?) displays in error text color in its place.

The reason code, which can be as long as 20 characters, identifies the specific problem that requires operator intervention. The reason code must be datafilled in file XINFBRSN.TBL (described in Chapter 13.0, "Data schema"), or the string "Error #xxx" displays in error text color. The number "11" in Application field I of the MSA (as shown in Figure 31) represents a reason code that is not defined.

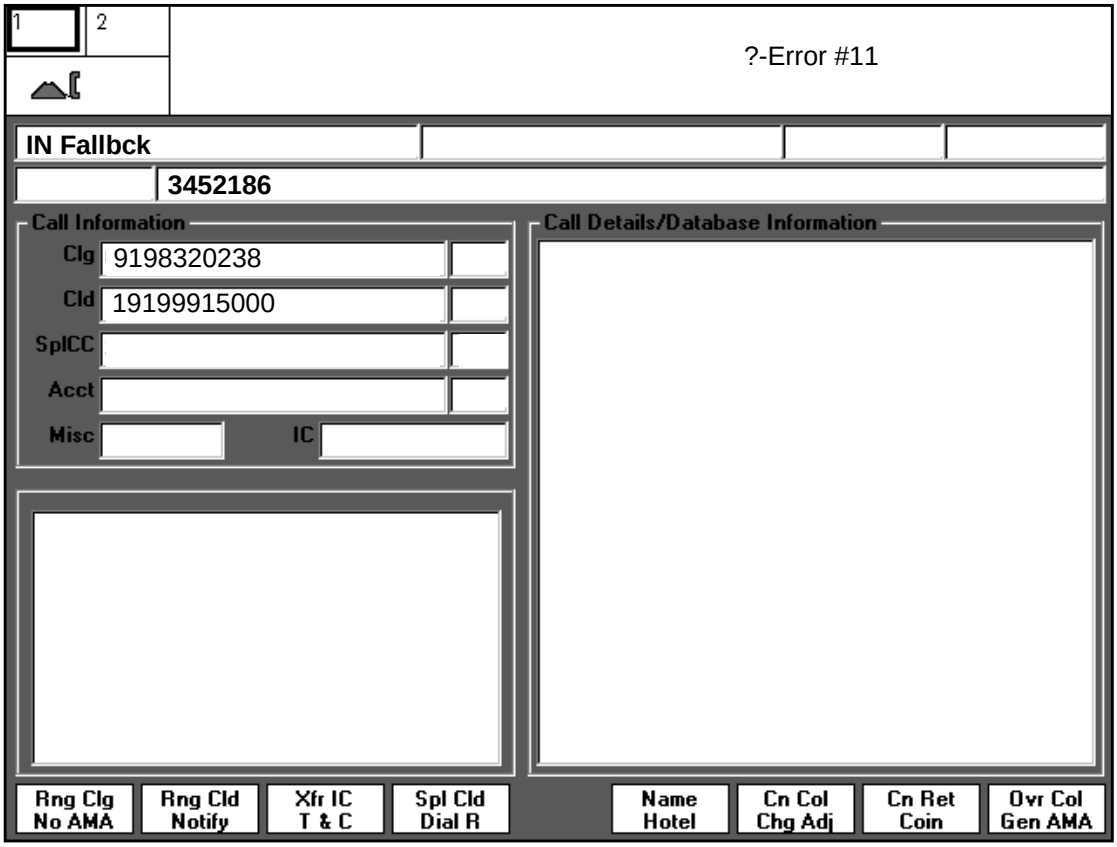


Figure 31. Undefined reason display for IN fallback call

11.0 Installing the IWS Billing application

The IWS Billing application is installed as part of a global IWS installation utility. For instructions on installing the billing software, consult *TOPS IWS Base Platform User's Guide,* 297-2251-010.

12.0 Configuring the IWS Billing application

The IWS Billing application *WILL NOT* initialize without proper configuration of the language (.LNG), initialization (.INI), and table (.TBL) files. For instructions on datafilling the initialization, table, and language files specific to IWS Billing, refer to the *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

The provisioning tool described in the above guide creates a graphical user interface (GUI) for datafilling the necessary files by allowing a user to select the appropriate file, edit the file data, and save the changes. The provisioning tool also provides error checking for input and "Help" buttons with informative text about the file being datafilled.

Note: If the IWS Billing application detects invalid or out-of-range datafill while the position is being initialized, the position may fail to boot (or reboot). In such a case, an appropriate error message displays.

12.1 Configuring NTOAINI.INI

File NTOAINI.INI is configured to define various IWS parameters used by the IWS Billing application. The following sections describe some representative parameters that must be set to configure file NTOAINI.INI. Use the provisioning tool to datafill file NTOAINI.INI, and see *TOPS IWS RAMP and Provisioning User's Guide,* 297-2251-015, for instructions and descriptions of NTOAINI.INI parameters.

12.1.1 Configuring the IWS Billing application PIN encryption algorithm

The IWS Billing application supports the ability to encrypt the calling card PIN associated with an enhanced calling card when communicating with the calling card database (CCDB) or calling card service node (CCSN). For the enhanced calling cards to be recognized and validated properly, each component must be configured to use the same encryption method. If the same encryption method is not used on all enhanced calling card components, proper calling card validation will not occur.

File NTOAINI.INI identifies the specific method for IWS PIN encryption. The default is "0."

If the service provider requires PIN encryption, consult Nortel Networks Customer Service/Project Management to identify the specific method to use.

12.1.2 Configuring the IWS Billing application custom AMA layout

If the operator performs a general AMA or charge adjust from the functions menu, the pertinent custom AMA information (such as an account code or PIN) is appended to the record automatically in the Operator Services System Advanced Intelligent Network (OSSAIN) environment. If the operator makes a context switch (for example, between the Billing application and directory assistance), the appropriate custom AMA submodule is sent to the DMS switch, so long as parameter CustomAMALayout=1 in file NTOAINI.INI. (The default is CustomAMALayout=0.) If custom AMA applies but

further information is needed, the operator is prompted by a question mark (?) in the field needing information.

The IWS Billing application supports the ability to choose the custom AMA layout when a call is billed to an enhanced calling card. If the proper custom AMA layout is not used, the correct AMA record may not be sent to the DMS switch.

File NTOAINI.INI identifies the specific method for a custom AMA layout. The valid range is 0-2, with a default of 0.

If parameter CustomAMALayout is set to 0, no custom AMA is sent to the DMS switch. If parameter CustomAMALayout is set to 1, layout 1 is sent. If set to 2, layout 2 is sent. Both layouts consist of three submodules: one with enhanced card data, one with service data, and one final. Padding is done with “F” in layout 1 and “0” in layout 2, and termination is marked by a “C.”

For more information on custom AMA layouts, refer to *Enhanced Calling Card, Calling Card Service Node, AMA submodule specification,* 355-02942-00001.

12.1.3 Configuring the query fail flags

The IWS Billing application provides for some flexibility in handling calling card validation error conditions with the two query fail flags, LIDBQueryFailFlag and CCDBQueryFailFlag, in file NTOAINI.INI.

12.1.3.1 LIDBQueryFailFlag

Note: The LIDBQueryFailFlag applies only if an enhanced calling card database is connected to the IWS network. (Parameter DBConnected is set to 1.)

The LIDBQueryFailFlag, if set to 0 (the default), indicates to the IWS Billing application to handle all line information database (LIDB) errors and lookup failures exactly as datafilled in DMS table ACCSERR.

As shown in *North American DMS-200 Translations Guide,* Volume 15, 297-8021-350, table ACCSERR contains a number of error conditions that may occur during LIDB queries. Some of the error conditions include:

- NETFAIL—failure of the CCS7 network
- NETCONT—congestion of the CCS7 network
- TIMEOUT—CCS7 timeout from target LIDB
- MISSREC—custom record is not found in LIDB

For each error condition, switch datafill can be specified in table ACCSERR to indicate what handling should occur when the error condition occurs. Examples of handling include the following:

- Block—The call is denied with this billing.
- Verify—Verification of acceptance from the billed party is required.
- Accept—Allow the call as if the LIDB response was valid, even though the validation failed.

The LIDBQueryFailFlag, if set to 1, indicates to the IWS Billing application to handle those LIDB failure conditions in table ACCSERR that are marked to accept as domestic-only completions, instead of allowing the call in general. In addition, custom AMA is appended in certain circumstances.

The LIDB is queried after an unsuccessful attempt is made to query the enhanced calling card database. If one of the error conditions in table ACCSERR is met and marked "Accepted," the following processing occurs:

- If the CCDB is down, the calling card is assumed to be enhanced, and the appropriate custom AMA information is sent.
- If the CCDB is up but the card is not found in the CCDB, then no custom AMA information is sent.

The primary purpose of the LIDBQueryFailFlag is to allow for domestic-only call completion in scenarios in which LIDB links (and possibly CCDB links) are down, or when an enhanced card has not yet been properly provisioned into the CCDB.

When the LIDBQueryFailFlag is set to 1, DMS table ACCSERR should be configured for "Accept" for all LIDB error conditions in which domestic completions are to be allowed.

TABLE 11. LIDBQueryFailFlag error scenario summary

Error scenario summary	ACCSERR response	LIDBQuery-FailFlag	Result
LIDB down and CCDB down or card not found in CCDB	A	0	All calls complete
LIDB down and CCDB down or card not found in CCDB	B	0	Call blocked
LIDB down and card not found in CCDB	A	1	Domestic-complete
LIDB down and CCDB down	A	1	Domestic-complete only, send custom AMA
LIDB down and CCDB down or card not found in CCDB	B	1	Call blocked

12.1.3.2 CCDBQueryFailFlag

Note: The CCDBQueryFailFlag applies only if an enhanced calling card database is connected to the IWS network. (Parameter DBConnected is set to 1.)

When the CCDBQueryFailFlag is set to 0, the IWS Billing application handles CCDB error conditions the same as a CCDB look-up failure. (The enhanced calling card is marked invalid, and billing is denied.)

When the CCDBQueryFailFlag is set to 1, the IWS Billing application allows domestic-only completions in scenarios in which the CCDB is down, and the LIDB is up, but the card is not found in the LIDB.

Custom AMA information is sent. The primary purpose of this flag is to allow for domestic-only call completion under scenarios in which the CCDB links are down, and the card is not found in the LIDB.

TABLE 12. CCDBQueryFailFlag error scenario summary

Error scenario summary	CCDB-Query-Fail Flag	Result
CCDB down and card not accepted by LIDB or ACCSERR	0	Call blocked
CCDB down and card not accepted by LIDB or ACCSERR	1	Domestic allowed, custom AMA is sent

12.2 Configuring MPXINI.INI

File MPXINI.INI contains a listing of the applications the IWS base application will run when the IWS position is started. To add the IWS Billing application to file MPXINI.INI, use the IWS provisioning tool. For instructions on datafilling initialization files, refer to *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015. For specific information on file MPXINI.INI, refer to *TOPS IWS Base Platform User's Guide*, 297-2251-010.

If you want IWS Billing to be the default application for the position (that is, the default application to switch to if a call arrives at the position and no application is loaded to process it), assign the IWS Billing application as the default registering application. Otherwise, define it as one of the registering applications. Figure 32 shows the provisioning tool screen with the IWS Billing application as the registering application.

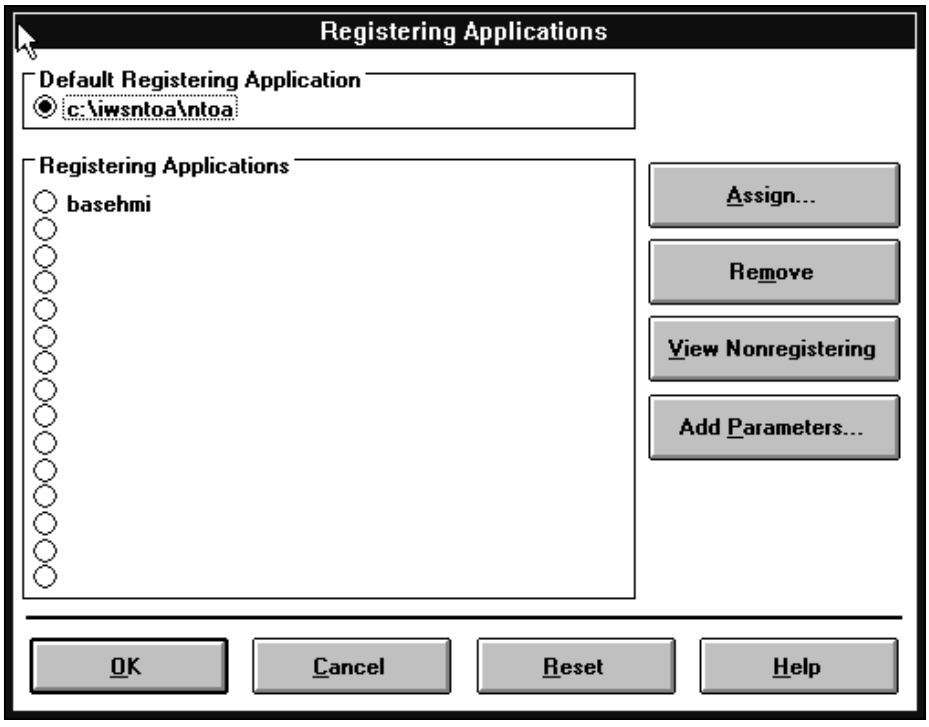


FIGURE 32. Registering application–NTOA

The TOPS IWS position must be rebooted for any MPXINI.INI file changes to take effect.

12.3 Configuring MPXTOP.INI

File MPXTOP.INI is datafilled to contain the IP address of each server to which a particular position is connected. The service number and protocol type for the IWS Billing application must be specified when file MPXTOP.INI is configured. The file has the following format:

service number=primary IP address, port number=secondary IP address, port number=protocol type

Table 13 explains the contents of the file.

TABLE 13. MPXTOP.INI field descriptions

Field name	Description
16	service number for IWS Billing application (always “16” for IWS Billing application)
primary IP address	IP address of primary CCDB server
port #	number on primary server, assigned to IP-IWS multi in the MMS configuration (default is 9000)
3	protocol type (always “3” for IWS Billing application)
secondary IP address	IP address of secondary CCDB server
port #	number on secondary server, assigned to IP-IWS multi in the MMS configuration (default is 9000)
3	protocol type (always “3” for IWS Billing application)

12.4 Configuring SCRPTINI.INI

For the IWS Billing application to display the scripting window automatically at call arrival, a section must exist for the application in initialization file SCRPTINI.INI. By default, a section already exists for the IWS Billing application with the Enable entry set to 0. This 0 value specifies that the IWS Billing application does not display the scripting area automatically at call arrival. The IWS provisioning tool can be used to change this setting to enable automatic display of the scripting window at call arrival. Also the provisioning tool can be used to change the scripting window location and size as desired. For more information about the IWS provisioning tool and how to use it to alter IWS .INI files, refer to *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015. For more information on file SCRPTINI.INI, refer to *TOPS IWS Base HMI Application Guide*, 297-2251-013. As with other IWS datafill files, the TOPS IWS position must be rebooted for any SCRPTINI.INI file changes to take effect.

The application name used for the IWS Billing application section name in the SCRPTINI.INI file is as follows:

application tag: “NTOA”

12.5 Configuring SCRPTSCR.SCR

For specific information on adding or changing script messages in file SCRPTSCR.SCR for display in the scripting window, refer to *TOPS IWS Base HMI Application Guide*,

297-2251-013. As with other IWS datafill files, the TOPS IWS position must be rebooted for any SCRPTSCR.SCR file changes to take effect.

12.6 Configuring the keyboard for the IWS Billing application

For the IWS Billing application to run properly, the following keys must be added to the default section of file XKBOARD.TBL:

- **Con**
- **CaCall**

12.6.1 Configuring the keyboard for enhanced calling card database

For the IWS Billing application to run properly when an enhanced calling card database is connected, the following additional keys must be added to the default section of file XKBOARD.TBL:

- **Thr/CC**
- **OVR**
- **DB**
- **Acct**

If the enhanced calling card database is not connected, there is no need to datafill these keys.

For specific information on layout, refer to *TOPS IWS Base Platform User's Guide*, 297-2251-010. For information on datafilling, refer to *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

12.7 Key macros

Key macros link multiple key actions and perform them as a single keystroke. Key macros are similar to hot keys, but they provide more flexibility because they can be created for any application that accepts keystrokes on the IWS position through the API/SDK. A key macro can be defined, for example, so that just one keystroke replaces those that otherwise are necessary to invoke an action (for example, **Fncts**, 1, 1 [Notify], **Start**, 1, 0, **Start**). When you press the key that triggers a given key macro, you see in rapid succession the screen displays that an operator would see while pressing each key separately. The difference is that the screen displays occur very quickly.

Up to 25 keystrokes can be combined into a single macro, and up to 25 key macros can be defined.

KeyBind is used to set up and edit key macros for use on the IWS position. KeyBind is described in *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

12.8 Mouse considerations

The use of a mouse is not recommended for navigation in the IWS Billing application. Whether the mouse is disabled or not, however, you should be aware of the following two special circumstances:

- If you are using a mouse with the Billing application, you may experience a loss of focus. Clicking the mouse in certain areas causes the active window to gray out and lose focus. Softkeys do not respond, and any keyboard keystrokes associated with the window may be inactivated. To regain focus, move the cursor over the window where you were working and click the mouse.
- You should also be aware that it is possible to use the mouse to cut and paste.

13.0 Data schema

This chapter surveys the files used to configure the IWS Billing application. All files in this chapter can be datafilled using the IWS provisioning tool, which is described in *TOPS IWS RAMP and Provisioning User's Guide,* 297-2251-015.

13.1 Initialization files

Files with an ".INI" suffix are run to start applications. Windows initialization files provide a standard format in which Windows applications can embed their initialization data.

Initialization files are composed of sections, and sections are composed of entries. An entry can have an integer value or a string value. Initialization files also allow comment lines that begin with a semicolon. The basic form of the file is:

```
;comment
[section name]
entry=value
```

The IWS Billing application requires the NTOAINI.INI and MPXTOP.INI initialization files.

13.2 Language data files

Each window has language data files, which contain values for window titles, field labels, and softkey labels. Several Base HMI language files must be configured to correspond with the IWS Billing application. For details on these files, refer to *TOPS IWS Base HMI Application Guide,* 297-2251-013. The file extension for language files is .LNG.

Table 14 shows the language files required by the IWS Billing application.

Table 14. Language files required by the IWS Billing application

Description	Language file
call information area labels	PCCCINFO.LNG
call details area labels	PDCALLD.LNG
database softkeys labels	PCCDBSK.LNG
restriction text	DATABASE.LNG

Each language data file contains text strings, which are identified by a number called a string ID. The content of each string can be changed, but the string cannot be deleted, and the string must not exceed its maximum length. If the quoted text string is longer than the allowed field length, the string is truncated. This is not considered an error condition, so no indication of the truncation is given.

English is the default language in the data files provided with the IWS Billing application. The content may be changed to reflect any desired language supported by the ANSI character set.

String lengths of datafill lines should not exceed 80 characters. Use the provisioning tool to datafill language files. For instructions on datafilling language files, see *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

13.2.1 PCCCINFO.LNG

File PCCCINFO.LNG is the enhanced calling card database application call information language file. This file contains string IDs and English language text to display in the call information window and the message/status area (MSA). String lengths are noted for each parameter.

Table 15 shows the range of values of the fields belonging to file PCCCINFO.LNG. The table is followed by a description of each field.

Table 15. PCCCINFO.LNG fields

Field name	Range of values	Sample values
String ID	4 digits	0025
Text string	Max characters varies from field to field (specified in the provisioning tool displays)	Call Information

string ID: This field contains a value that identifies a text string.

text string: This field contains text for window titles, field labels, field entries, and database error messages.

Note: Some of the text displayed in the service/type field comes from various base datafill files such as XCASTS.TBL and XCLLORIG.TBL.

13.2.2 PDCALLD.LNG

File PDCALLD.LNG is the enhanced calling card call details language file. This file contains the labels for the call details window (area 4).

Table 16 shows the ranges of values of the fields belonging to file PDCALLD.LNG. The table is followed by a description of each field.

Table 16. PDCALLD.LNG fields

Field name	Range of values	Sample values
String ID	4 digits	0010
Text string	Max characters varies from field to field (specified in the provisioning tool displays)	Start CLG TBI

String ID: This field contains a value that identifies a text string.

Text string: This field contains text for display in the fields of the call details (area 4) fields. A field with the phrase "None Applicable" indicates that the field is used by the feature but the displays for the field are not taken from this file.

13.2.3 PCCDBSK.LNG

File PCCDBSK.LNG contains the labels for the database softkeys.

Table 17 shows the ranges of values of the fields belonging to file PCCDBSK.LNG. The table is followed by a description of each field.

Table 17. PCCDBSK.LNG fields

Field name	Range of values	Sample values
Softkey label ID	2 digits	02
Top softkey label	7 characters	Restr
Bottom softkey label	7 characters	List

Softkey label ID: This field contains a value that identifies a text string.

Top softkey label: This field contains text for display in the top row.

Bottom softkey label: This field contains text for display in the bottom row.

13.2.4 DATABASE.LNG

File DATABASE.LNG supplies string identifiers with text strings for display of information from the CCDB in the two database display windows (areas 3 and 4).

Table 18 shows the range of values of the fields belonging to file DATABASE.LNG. The table is followed by a description of each field.

Table 18. DATABASE.LNG field

Field name	Range of values	Sample values
String ID	4 digits	0011
Text string	Max characters varies from field to field	Enabled Numbers:

String ID: This field contains a value that identifies a text string.

Text string: This field contains text for window titles, field labels, field entries, and database error messages in the database display areas.

13.3 Table data files

Table 19 shows the table files provided by IWS base software that are required by the IWS Billing application. Each table is described in *TOPS IWS Base Platform User's Guide*, 297-2251-010.

Table 19. Table files provided by IWS base software

Table file	Description
XCASTS.TBL	call arrival status
XCLLORIG.TBL	call origination
XCORGXSC.TBL	call origination type (for scripting)
XCT4Q.TBL	call type for queuing
XCT4QMNU.TBL	call type for queuing menu
XCT4QXSC.TBL	call type for queuing (for scripting)
XLANG.TBL	language name
XRBLG.TBL	restricted billing
XTGDSPL.TBL	trunk group display
XCTRYDIR.TBL	country direct
XCDFA.TBL	country name

Table 20 shows the tables provided by the IWS Billing application.

Table 20. Table files provided by the IWS Billing application

Table file	Description
XPCCSK.TBL	toll softkeys
XPCCTRIG.TBL	trigger profiles
XDBERROR.TBL	database error text
XDBVRSTN.TBL	database restriction list
XDBCOMP.TBL	service number and language index into service list
XDBSRVC.TBL	service list and info
XRCXSC.TBL	maps script IDs to reason codes
XSPIDXSC.TBL	maps script IDs to SPID
XINFBSVC.TBL	maps IN service number to text
XINFBRSN.TBL	maps IN reason code to text

String lengths of datafill lines should not exceed 80 characters. Use the provisioning tool to datafill these files. For instructions on datafilling table files, see *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015.

13.3.1 XPCCSK.TBL

File XPCCSK.TBL defines the toll softkeys that are presented to the operator when a call arrives at the position.

Table 21 shows the range of values of the fields belonging to file XPCCSK.TBL. The table is followed by a description of each field.

Table 21. XPCCSK.TBL fields

Field name	Range of values	Sample values
Softkey label ID	00-15 decimal	09
Function ID	0-77 decimal	4
Display label	up to 7 ASCII char	Rng Cld

Softkey label ID: This field contains an integer value associated with the softkey being defined.

Function ID: This field contains an integer value that uniquely defines the function invoked when the softkey is pressed. The maximum value of a function ID can be no greater than the maximum function ID in file XFNCTS.TBL, which is described in *TOPS IWS Base Platform User's Guide,* 297-2251-010.

Display label: This field contains a normal ASCII text string that identifies to the operator the function invoked when the softkey is pressed. The text must be enclosed by double quotation marks.

13.3.2 XPCCTRIG.TBL

File XPCCTRIG.TBL is the IWS Billing application trigger index file. This file is datafilled to send a trigger profile index to the DMS switch for one of the following tasks:

- float an enhanced calling card call
- float a local exchange carrier/commercial credit card (LEC/CCC) call
- float a collect or third-party call

Trigger profiles are datafilled in the DMS file OATPRFIX.

The following table shows the range of values of the fields belonging to file XPCCTRIG.TBL.

Table 22. XPCCTRIG.TBL fields

Field name	Range of values	Sample values
Index	0-2	1
Trigger profile index	0-2047	2047

Index: This field specifies a digit that equates an index with a trigger profile.

Trigger profile index: This field contains the trigger profile indices defined in the DMS table OATPRFIX. The value 2047 is the defined nil value. To disable trigger processing for any of the indices, set the value of the trigger profile index to 2047 (nil).

13.3.3 XDBERROR.TBL

File XDBERROR.TBL is datafilled with text strings that signal a database error to the operator. The text is displayed in the error text color in the MSA.

The following table shows the range of values of the fields belonging to file XDBERROR.TBL.

Table 23. XDBERROR.TBL fields

Field names	Range of values	Sample values
Error code	1000-4999 decimal	1013
Error text	1-24 characters	Invalid connect status

Error code: This field contains a value that identifies a database-defined error number.

Error text: This field contains the text string interpretation of the error code. The text strings must be enclosed in double quotation marks.

13.3.4 XDBVRSTN.TBL

File XDBVRSTN.TBL is datafilled to provide the operator with a display of the list of violated restrictions. The datafill must correspond with the error codes defined for the CCDB and the CCSN.

The following table shows the range of values of the fields belonging to file XDBVRSTN.TBL.

Table 24. XDBVRSTN.TBL fields

Field name	Range of values	Sample values
Restriction number	0-99	0006
Restriction text	max 25 characters	Weekday call restricted

Restriction number: This field contains the text string identifiers of restriction text.

Restriction text: This field contains the list of violated restrictions that may be shown to the operator. Text strings must be in double quotation marks.

13.3.5 XDBSRVC.TBL

File XDBSRVC.TBL is datafilled with the available services, associated names, and service-specific information such as trigger index profiles.

The following table shows the range of values of the fields belonging to file XDBSRVC.TBL.

Table 25. XDBSRVC.TBL fields

Field names	Range of values	Sample values
Service number	0-300 decimal	1
Service chargeability	1 character	Y
Service name	1-15 characters	Sample-Service1
OAP trigger profile index	0-2047	2047
Billing method	1 character	E
Billing data	1-15 digits	012345678912345

Service number: This field contains an integer that represents a service number.

Service chargeability: This field specifies whether the associated text string will be displayed. Y = service is chargeable, N = service is not chargeable.

Service name: This field contains text strings describing the service type. The strings must be in double quotation marks.

OAP trigger profile index: This field contains the trigger profile indices that correspond with the DMS file OATPRFIX. Note that 2047 represents a nil (no-action) trigger.

Billing method: This field specifies the billing method. N = no billing, E = enhanced billing.

Billing data: This field contains text strings for billing. The strings must be in double quotation marks.

13.3.6 XDBCOMP.TBL

File XDBCOMP.TBL is datafilled with the service number and language number (from file XLANG.TBL) that index to the completion number and completion number type for the list of valid services. Since there can be up to 301 services and three languages, the maximum number of tuples for this table is 903.

The following table shows the range of values of the fields belonging to file XDBCOMP.TBL.

Table 26. XDBCOMP.TBL fields

Field names	Range of values	Sample values
Service number	0-300 decimal	2
Language	0-99	0
Completion number type	1-3	2
Completion number	1-17 digits	1 (OGT menu item 1)

Service number: This field contains an integer that represents a service number.

Language: This field contains the numbers corresponding to the language numbers in file XLANG.TBL.

Completion number type: This field contains one of three numbers defined by the database protocol. 1 = B number, 2 = outtrunk number (index from table TQOGTKEY), and 3 = switch queue ID (index from table TQOGTKEY).
For completion number types of 2 and 3, a TQOGTKEY index corresponding to ASSISTANCE request is not supported.

Completion number: This field contains text strings of digits, without separators.

13.3.7 XRCXSC.TBL

File XRCXSC.TBL maps script IDs to specific reason codes. A reason code indicates why a call has been transferred to the IWS position.

The following table shows the range of values of the fields belonging to file XRCXSC.TBL

Table 27. XRCXSC.TBL field descriptions

Field name	Range of values	Sample values
Reason code	1000-4999	1001
Script ID	1-300	3

Note: The reason codes in file XRCXSC.TBL must correspond to the reason codes in the CCDB.

Reason code: This field contains the numeric identifier of the reason for operator assistance.

Script ID: This field contains the numeric identifier of the script message and title associated with the reason code.

13.3.8 XSPIDXSC.TBL

File XSPIDXSC.TBL is used to map a script ID to any service provider ID (SPID) in scripting.

The following table shows the range of values of the fields belonging to file XSPIDXSC.TBL.

Table 28. XSPIDXSC.TBL field descriptions

Field name	Range of values	Sample values
SPID index	0 - 249	0

Table 28. XSPIDXSC.TBL field descriptions

Field name	Range of values	Sample values
SPID	4 uppercase alphanumeric characters	SID0
Script ID	1 - 300	4

SPID index: This field contains a number that points to the location of a SPID listed in this table file.

SPID: This field contains a combination of the four uppercase characters and numbers that comprise a SPID.

Script ID: This field contains a number that identifies a script title and message associated with a SPID.

13.3.9 XINFBSVC.TBL

File XINFBSVC.TBL contains the service identifier index and corresponding text string for display, so the operator knows which service was handling the call when operator intervention became necessary.

The following table shows the range of values of the fields belonging to file XINFBSVC.TBL.

Table 29. XINFBSVC.TBL field descriptions

Field name	Range of values	Sample values
Service identifier	0-5 services	0
Service text	3 characters	CRD

Service identifier: This field contains the service number, as identified by ServiceBuilder.

Service text: This field contains the text string explanation associated with the service identifier.

13.3.10 XINFBRSN.TBL

File XINFBRSN.TBL maps a service identifier and a reason code with a text string for display, so the operator knows the specific problem requiring attention.

The following table shows the range of values of the fields belonging to file XINFBRSN.TBL.

Table 30. XINFBRSN.TBL field descriptions

Field name	Range of values	Sample values
Service identifier	0-5 services	0
Reason code	0-255	3
Reason text	20 characters	Incorrect PIN

Service identifier: This field contains the service number, as identified by ServiceBuilder.

Reason code: This field contains the numeric identifier of the reason for operator assistance.

Reason text: This field contains the text string explanation associated with the reason code.

13.3.11 XSERVS.TBL

File XSERVS.TBL contains the TOPS service numbers mapped to the IWS applications that provide the services. For the IWS base application to know about the services that the IWS Billing application provides, file XSERVS.TBL must be modified. When the Queue Management System (QMS) is in use, the TOPS services listed in this file must refer to the same TOPS services datafilled in DMS table TQMSSERV. The following figure provides an example of the datafill that might be used to provision file XSERVS.TBL.

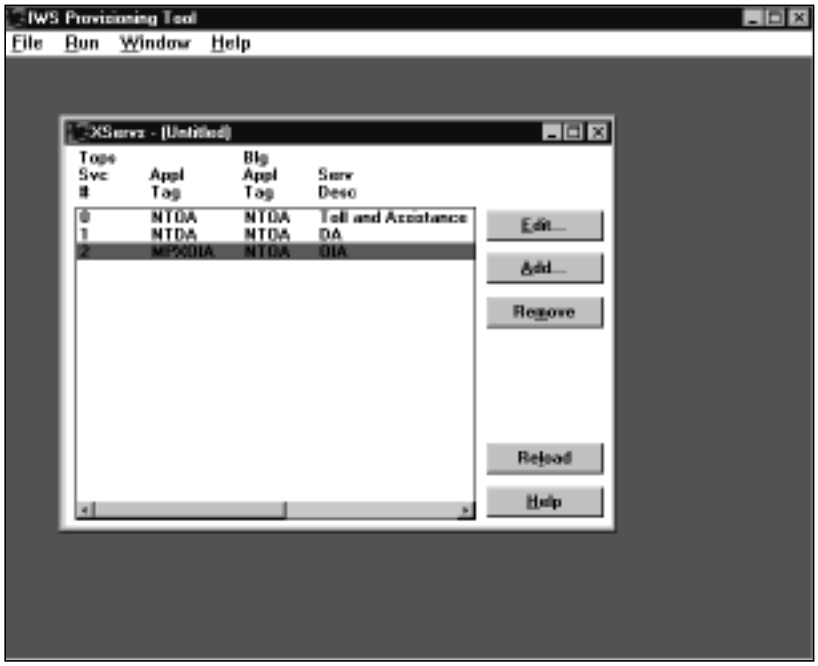


FIGURE 33. Sample XSERVS.TBL datafill in provisioning tool

The following table shows the range of values of the fields belonging to file XSERVS.TBL. The table is followed by a description of each field.

Table 31. XSERVS.TBL fields

Field name	Range of values	Sample values
TOPS Svc #	0-62	0
Appl Tag	up to 8 ASCII char	NTOA
Blg Appl Tag	up to 8 ASCII char	NTOA
Serv Desc	up to 19 ASCII char	toll

Table 31. XSERVS.TBL fields

Field name	Range of values	Sample values
Service type text	up to 6 char	toll
Restricted billing table	0,1,2	0

TOPS Svc #: The number of the application, or service. With the QMS call queuing system in the DMS switch, the service numbers in this file MUST match the service numbers in the corresponding DMS table, TQMSSERV. These numbers must be between 0 and 62.

Appl Tag: The application tag is a text string that identifies the position executable that provides the application. Be sure to use the exact tag shown in Figure 33.

Blg Appl Tag: The billing application tag is a text string that identifies the position application providing the billing functions for the TOPS service. Be sure to use the exact tag shown in Figure 33.

Serv Desc: The service description is a text string that provides the name of the service.

Serv Type Text: The service type text is a string that can be displayed by applications at call arrival to identify the TOPS service of the new call.

Rest Bill Tbl: The number that identifies which restricted billing table to use for display of restricted billing information.

0 - No restricted billing table
1 - Toll restricted billing table
2 - DA restricted billing table

13.3.12 XAPPL.TBL

File XAPPL.TBL contains information about the applications that can be accessed without the DMS switch and associates each with a value that represents that application index on the IWS applications menu. To allow IWS Billing to be accessed through the IWS applications menu, add the IWS Billing application (as NTOA) to file XAPPL.TBL. The following figure provides an example of the datafill that might be used to provision file XAPPL.TBL, using the provisioning tool.

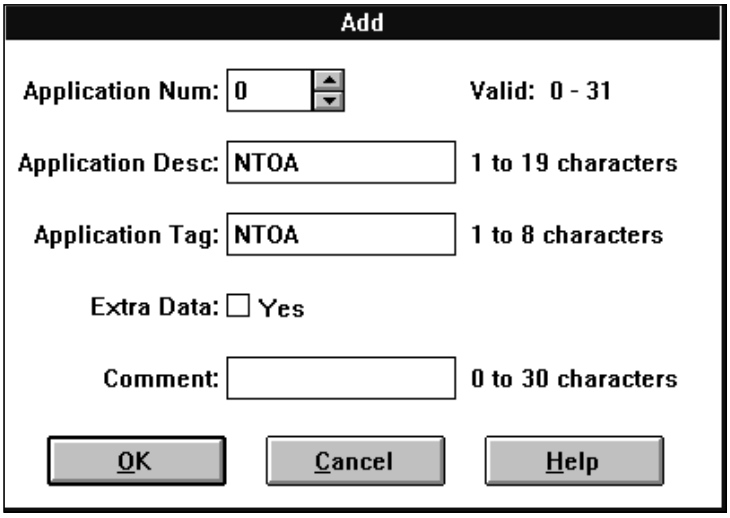


FIGURE 34. Datafill for NTOA in XAPPL.TBL

The following table shows the range of values of the fields belonging to file XAPPL.TBL. The table is followed by a description of each field.

Table 32. XAPPL.TBL fields

Field name	Range of values	Sample values
Appl Num	0-31 numeric	0
Appl Desc	up to 19 ASCII char	NTOA
Appl Tag	up to 7 ASCII char	NTOA
Extra Data Indicator	check box	N

Appl Num: The number of the application. Each application entry must have a unique number.

Appl Desc: The application description is a text string that provides the name of the application.

Appl Tag: The application tag is a text string that identifies the position executable that provides the application. Be sure to use the exact tag shown in Figure 34.

Extra Data Indicator: An indication that the operator will be prompted for extra data input when this application is chosen from the menu. Leave the box unchecked for applications that can be brought into focus by entering a number in the first box only. Check the “Y” box if you want to be prompted to enter data in the second box.

14.0 Logs and other error messages

14.1 IWS Billing application logs

The logs generated by the IWS Billing application are collected by the Remote Access Maintenance Position (RAMP). For specific information on the log report format and how to view the logs, refer to *TOPS IWS RAMP and Provisioning User's Guide*, 297-2251-015. A list of logs generated by the IWS Billing application (NTOALOGS.DOC) may be found in the C:\IWSNTOA directory. The files can be viewed with the editor of your choice.

14.2 Initialization/runtime errors

Errors in the IWS Billing application that occur during initialization or runtime might result in display of a Microsoft Windows message box. These errors require immediate action to resolve the problem. A log might not be created during initialization, so these messages are the only way to inform the user of a problem.

A message box can usually be cleared by pressing the space bar on the keyboard. Depending on the nature of the error, initialization of the IWS Billing application may or may not fail.

A list of descriptions of the message boxes generated by the IWS Billing application (NTOAMSGS.DOC) is found in the C:\IWSNTOA directory. The files can be viewed with the editor of your choice.

15.0 Revisions

15.1 Revisions for 17.1

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    none
  - **Altered files:**
    SCRPTINI.INI
    MPXINI.INI
    MPXNET.INI
    NTDAINI.INI
    HOSTS.TBL
    PDCALLD.LNG
  - **Deleted files:**

    none
- IWS IP Positions are now available. Refer to the *TOPS IWS Base Platform User's Guide*, 297-2251-010 for additional information.
- IWS supports receiving a foreign requested directory number from the TOPS switch. Previously IWS could accept only domestic requested numbers.

15.2 Revisions for release 17.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    none
  - **Altered files:**
    MPXINI.INI (IWS Base)
    SCRPTINI.IN I(IWS Base)
    AACTSFK.LNG
    NTDAMISC.LNG
    OIAMSA.LNG
  - **Deleted files:**

    none
- Windows XP Professional has replaced Windows 95 as the IWS operating system. Refer to the *TOPS IWS Base Platform User's Guide*, 297-2251-010 for additional information.

15.3 Revisions for release 15.2

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    none

— **Altered files:**
MPXINI.INI
SCRIPTINI.INI

— **Deleted files:**

none

- Scripting has changed for the IWS Billing application. A new option in base file SCRIPTINI.INI allows the scripting window to display at call arrival without automatically having keyboard focus. At call arrival the cursor is placed in the appropriate data entry field. This reduces the number of key actions required from the operator. The operator can quickly scan the script and immediately begin call processing. Refer to Section 9.0 on page 93.
- In base file SCRIPTINI.INI, the NTOA parameter VisibleDuringCall has been removed. If scripting is enabled, the window now displays throughout the call. The parameter GiveScrptFocusOnArrival has been added. This new parameter controls whether the script window automatically gets focus at call arrival, or whether the appropriate NTOA (IWS Billing) field gets focus.

15.4 Revisions for release 15.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:

— **New files:**

none

— **Altered files:**
none

— **Deleted files:**

none

15.5 Revisions for release 14.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:

— **New files:**

none

— **Altered files:**
none

— **Deleted files:**

none

- A new menu allows the operator to transfer certain calls to queues designated to handle calls of that type. The call type for queueing (CT4Q) menu window displays in the operator information window when the operator presses the **CT4Q** key on the IWS keyboard twice. Up to 2046 call types for queueing can be listed in the CT4Q menu.

- A new **CT4Q** key allows access to the new CT4Q menu. Before it can be used, the **CT4Q** key must be bound to a key on the IWS keyboard.
- New IWS base files CT4QMENU.LNG and XCT4QMNU.TBL support the operations of the CT4Q menu.

15.6 Revisions for release 13.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    none
  - **Altered files:**
    none
  - **Deleted files:**

    none
- The NTOA application was manufacture discontinued in release 13, and the title of the NTOA Plus application was changed to IWS Billing application.

15.7 Revisions for release 12.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    none
  - **Altered files:**
    none
  - **Deleted files:**

    none
- **Operator maximum handoff icon:** The “No Handoff” icon originally displayed for AABS calls now also appears for Billing and Access Services calls when no subsequent handoffs are allowed to an automated system. This icon appears in the application message II field of the message/status area. (page 100)

15.8 Revisions for release 11.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    none
  - **Altered files:**

    XFNCTS.TBL
    XTGDSPL.TBL
    DATABASE.LNG

— **Deleted files:**

none

- **No automation:** An operating company can indicate that calls from a specific subscriber line do not arrive at an automated service (that all such calls go directly to an operator) and cannot be released to any automated service. If the subscriber requests that an individual call be released to an automated service, the operator can use the new Allow Automation function (in file XFNCTS.TBL) to release that call to an automated service. (page 100)
- **Trunk group displays:** In file XTGDSPL.TBL, you can now assign from 1 through 254 trunk group displays of up to eight characters each.
- **Restriction list labels:** In the restriction list labels in file DATABASE.LNG, strings Calls Today and Calls This Month change places. Calls Today had string ID 0017 and now has string ID 0015. Calls This Month had string ID 0015 and now has string ID 0017.
- **Call attribute restrictions:** An NTOA per-call search performs queries based on certain call attributes. Additional call attributes have been supported in IWS 11.0 for NTOA IPS queries. Queries can now be performed using the following call information:
  - trunk group
  - RAO format
  - phone class
  - switch ID
  - AMA RBC
- **Key macros:** A key macro can record multiple key actions and perform them as a single keystroke. Up to 25 key actions can be recorded in a key macro, and up to 25 key macros can be defined. The KeyBind utility is used to set up and edit key macros for use on the IWS position. (page 112)

15.9 Revisions for release 10.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:

  — **New files:**

  none

  — **Altered files:**

  NTOAINI.INI

  PCCCINFO.LNG

  — **Deleted files:**

  none
- **Special field editing:** Parameter SPL Field Editing is added to file NTOAINI.INI so the service provider can enable editing of a confirmed special number using the Edit key. (page 46)

- **NTOA ECC enhancements:** NTOA Plus is upgraded in the following areas:
  - One string (string ID 0018) is changed and two strings are added (string IDs 0041 and 0042)) to file PCCCINFO.LNG as labels for the different types of billing represented in the special field. (page 36)
  - (page 37)
  - Two new strings (string IDs 0043 and 0044) are added to file PCCCINFO.LNG to provide a message in the MSA about the status of CCDB validation. The operator can press the **Thr/CC** key to turn CCDB card validation on or off. (page 36)
  - If the operator enters only the PIN in the special field, these digits are appended to the called number and sent to the CCDB for validation as a complete enhanced calling card number.The length of ECC PINs can be datafilled with parameter Num PIN Code Digits in file NTOAINI.INI. (page 37)
  - For an ECC call with valid calling and called numbers, NTOA Plus queries the CCDB for any violated restrictions associated with the call, and displays them to the operator automatically in area 3. (page 57)

15.10 Revisions for release 9.0

- The following datafill (.INI, .TBL, .LNG) files were added, altered, or deleted:
  - **New files:**

    XSPIDXSC.TBL
  - **Altered files:**

    NTOAINI.INI
    SCRPTINI.INI
    MPXPARM.INI
    XDBERROR.TBL
    DATABASE.LNG
    PCCCINFO.LNG
  - **Deleted files:**

    none
- **NTOA Plus support for EBAS 1.03 changes:** Changes have been made in file NTOAINI.INI to accommodate NTOA Plus support of EBAS 1.03. This feature provides for operator backup for EBAS 1.03 on the IWS. EBAS provides automated toll and assist for the Intelligent Services Environment (ISE). The IWS can display the restrictions and branding text associated with the various service providers whose calls come through EBAS 1.03.

The following changes are made to parameters in file NTOAINI.INI:

- Parameter “CCDBConnected” in file NTOAINI.INI is renamed “DBConnected.” (page 49) Values 2 and 3 (page 74) are added as shown below:
  - 0=No database connected
  - 1=CCDB only connected
  - 2=combination IPS and CCDB connected
  - 3=IPS only connected
- The default value in parameter “DirNumConnect” is 1, indicating that a connection attempt to the database is made automatically. (page 35)
- A new string, “No Valid Billing Options,” is added in file XDBERROR.TBL to signal the operator that a billing type is not allowed on a call routed to an operator from the EBAS system. (page 74)
- New strings are added to file DATABASE.LNG (page 75) to display a billing option label and billing option strings for reseller services in area 3. The new strings are:
  - Allowed Billing string ID 27
  - Collect string ID 28
  - Third Party string ID 29
  - Call-Me Card string ID 30
  - LEC (DN) Card string ID 31
  - ISO Card string ID 32
  - RAO Card string ID 33
  - Station Paid string ID 34
  - None string ID 35
- A new string is added to file PCCCINFO.LNG (page 75) to display the heading in area 3 for service provider messages:
  - Service Provider Information string ID 40

- **Clock and call timer display changes:** Two new information displays show in the time field of the MSA. The call timer shows how long it took to process a call, and the clock displays local time. Following are the changes made to accommodate this feature in file MPXPARM.INI:
  - New section, clock (page 101), with the new datafillable variables:
    - ClockDisplay, to provide the optional display of the clock.
    - AdjustTime, to provide time adjustment for time zone difference. The range is +/- 12 hours.
    - CallTimerDisplay, to provide optional display of the timer.
- **Display of SPID/trunk group information changes:** Both SPID and trunk group information can now be displayed at the same time, and the service provider can select which piece of information displays in call headlines and

which displays in call details. File XSPIDXSC.TBL is added. (page 96) Following are the changes made to accommodate this feature in file MPXPARM.INI (page 27, page 85):

— DisplayBoth (settings are: 1 for on, 0 for off)

— Priority (settings are: 1 for trunk group, 2 for SPID)

- **Scripting changes:** Scripting hierarchies can now be set by the user to control the scripting window. The location of the window is changed to area 3 from area 4. (page 93) The following datafillable variables are added to file SCRPTINI.INI:

  — RCPriority

  — SPIDPriority

  — CT4QPriority

  — COPriority

  — VisibleDuringCall

  — The scripting window remains visible during call processing. When scripting is enabled through provisioning, the operator can switch between the application window and scripting window with call processing keys and the **Display script** key. (page 93)

15.11 Revisions for release 8.0

- Violated restrictions display automatically at call arrival if the subscriber has provided the calling card number, PIN, and called number.
- In the GOS environment, operator fallback is provided for subscribers whose calls cannot be handled by the ServiceBuilder intelligent node (IN) system. Two new tables are created, XINFBSVC.TBL for the service identifier and XINFBRSN.TBL for reason code text, both of which display in the MSA.
- NTOA is updated to maintain compliance with CCDB release 2.02. NTOA will now communicate only with release 2.00 or higher of the CCDB.
- When a list of violated restrictions displays, it includes the total number of calls made in the past day, week, and month, if this information is part of the subscriber's calling restrictions.
- The Special field labels (SplCC and Spl3d) in file PCCCINFO.LNG (string IDs 0018 and 0019) are changed from 6 to 5 characters in length.

15.12 Revisions for release 7.0

- The Proprietary Calling Card (PCC) application is updated and renamed the Nortel Operator Assistance (NTOA) application.
- The NTOA application is available in two forms, NTOA and NTOA Plus. NTOA provides basic toll and assistance capabilities for the operator. NTOA Plus provides this basic service, and it also gives the service provider a means

of specifying whether or not an enhanced calling card database (CCDB) is connected to the network. NTOA Plus provides basic toll and assistance as well as toll and assistance for the enhanced calling card holder and the operator through use of this external database. The database maintains enhanced calling card holder profiles that provide the operator with various types of information.

- If the position is being upgraded from release IWS06 with PCCAPP to release IWS07 with NTOA, the following actions must be taken:
  - The default application in MPXINI.INI must be NTOA.EXE, not PCCAPP.EXE.
  - The billing application in file XSERVS.TBL must be datafilled as NTOA, not PCCAPP.
  - The key assignments in file XKBOARD.TBL that were datafilled for PCCAPP must be datafilled for NTOA.
  - File NTOAINI.INI replaces file PCCINI.INI. For any customization or settings that were made prior to upgrading to release 07 in file PCCINI.INI to values other than the default, the Provisioning Tool or the DOS editor must be used to propagate the changes manually into file NTOAINI.INI.
  - Changes made to file PDCALLD.LNG from the default must be manually propagated to the new version of the file with the same name, to accommodate new string IDs.
  - File NTOALOGS.DOC replaces file PCCLOGS.DOC.
  - File NTOAMSGS.DOC replaces file PCCMSGS.DOC.
- The estimated call charges feature is added to NTOA. This feature enables the operator to estimate charges for a current or future call. A window to show information and provide for operator input displays in area 3 if this feature is active. A datafillable hardkey is added to access this feature. To support this feature, language file ESTWNDW.LNG and function Calculate Est Chg are created.
- The internal booked call database feature is added to NTOA for use in the GOS (Global Operator Services) environment. A window to show information and provide for operator input displays in area 3 if this feature is active, and softkeys are available to initiate various activities. A datafillable hardkey is added to access this feature. To support this feature, language files BKCALLDB.LNG and BKCALLSK.LNG, and table file XDBCLASS.TBL, are created.

- The following GOS features are added in the NTOA environment:
  - muted notify
  - alternate route
  - toll break-in
  - A-party name
  - B-party name
  - ticket number
  - international INW/DA
  - memo
  - DN screening (APC100/TOPS combo switch only)
- The existing NTOA custom AMA functionality now supports custom AMA when NTOA is being used as the billing application for directory assistance (DA). In the OSSAIN environment, the appropriate custom AMA submodule is sent to the DMS switch by NTOA even if the operator is using another service (such as NTDA).
- NTOA clears or sends the custom AMA that applies to the current call whenever a service switch from NTOA to some other service (such as DA) occurs.
- Datafillable account code lengths, both minimum (2) and maximum (8), are added in the NTOA Plus environment.
- Datafillable enhanced calling card personal identification number (PIN) lengths, to a maximum of four, are added in the NTOA Plus environment.
- All README files are eliminated.
- Field 5 of the call headlines area is modified to display the subscriber's service provider identification (SPID). Prior to the SPID display feature, this field displayed trunk groups, which might be named after operating companies. However, with local competition, subscribers of different operating companies may be affiliated with the same trunk. This feature allows operators to brand a call and to state the actual operating company of the subscriber.

  To prevent both displays from being sent to the position, office parameter OPP_ALWAYS_SEND_SPID_INFO is created. For IWS positions, the default setting is N(o), so the DMS switch sends only one display (either trunk group or SPID) to the position. If OPP_ALWAYS_SEND_SPID_INFO is set to Y(es), the operator may see a flash on the screen as the trunk group is overwritten by the SPID.
- Field 28 of the call details area is modified to display information about the Local Number Portability (LNP) status of a directory number (DN). The clock icon displays in the message status area (MSA) when an LNP query is in progress.

- Added colorblind support functionality, which allows the craftsperson to modify normal, error, and alert text to appear in colors more recognizable to colorblind and partially colorblind operators. Also added text flashing capability to help the colorblind operator. Provided the capability to activate this text flashing without enabling IWS colorblind support. Also added new class charge icons for the colorblind operator.
- Field 4 in the call information area is modified to display “Deny” when the DMS switch has screened a called number and found its status to be blocked or unpaid (GOS environment).
- Verified that NTOA and NTDA can run on the same position.

16.0 List of terms

AABS

See Automated Alternate Billing Service.

ACTS

See Automatic Coin Toll Service.

AMA

See automatic message accounting.

American Standard Code for Information Interchange (ASCII)

The standard coding method used by small computers to convert letters, numbers, punctuation, and control codes into digital format. There are 128 defined ASCII characters.

ANI

See automatic number identification.

API

See application programmer's interface.

application programmer’s interface (API)

A Windows messaging protocol and interface function used to exchange information (for example, between IWS base software and position applications) about system events (such as operator logon, call begin, call end, position maintenance commands), application requests to send Open Position Protocol (OPP) action identifiers (ActIDs) to the DMS switch, and application requests to generate IWS system logs.

ASCII

See American Standard Code for Information Interchange.

Automated Alternate Billing Service (AABS)

A feature that allows automated completion of calling card, collect, and third-number calls using voice recognition technology and prompt generation to communicate with the calling and billed parties.

Automatic Coin Toll Service (ACTS)

A feature package that allows the service provider to handle long distance coin calls from a coin station without operator assistance.

automatic message accounting (AMA)

An automatic recording system that documents all the necessary billing data of subscriber-dialed long distance calls.

automatic number identification (ANI)

A system whereby a calling number is identified automatically and transmitted to the AMA office equipment for billing.

call type for queueing (CT4Q)

Part of a system for organizing and assigning call queues. Instead of mapping call origination types directly to a call queue, table QMSTOPS provides a CT4Q. A series of tables then refine the CT4Qs to allow the traffic office to divide incoming traffic into separately manageable categories based on different call attributes, according to office-specific criteria.

calling card database (CCDB)

A database that stores card holder profiles for an enhanced calling card. Information from the CCDB determines whether or not restrictions apply to an enhanced calling card call, and can help detect potentially fraudulent calls.

calling card service node (CCSN)

An interactive audio software application running on the open architecture of the Network Applications Vehicle (NAV) platform. The CCSN allows the service provider to provide automated calling and billing services to a telephone caller. Callers who subscribe to the provider's enhanced calling card can also access a variety of additional automated services, such as menu services, account code billing, and three-way calling.

CAMA

See centralized automatic message accounting.

carrier identification code (CIC)

A code that identifies the carrier associated with the call

CCDB

See calling card database.

CCSN

See calling card service node.

centralized automatic message accounting (CAMA)

A system that produces itemized billing details for subscriber-dialed long distance calls. Details are recorded at a central facility serving a number of exchanges. In exchanges not equipped for ANI, calls are routed to a CAMA operator who gets the calling number and enters it into a computer for billing.

CIC

See carrier identification code.

CLEC

See competitive local exchange carrier.

competitive local exchange carrier (CLEC)

A service provider other than the established telephone company, that enters a local market to compete with the established carrier to provide local telephone service.

CSE

See customer service expert.

CT4Q

See call type for queueing.

customer service expert (CSE)

An operator position datafilled to provide full call handling capability on both card holder calls and general assistance requests.

DA

See directory assistance.

Digital Multiplex System (DMS)

The Nortel Networks central office switching system in which all external signals are converted to digital data and stored in assigned time slots.

directory assistance (DA)

A service that allows a caller to ask an operator to look up information from a telephone listing database.

directory number (DN)

The complement of digits required to designate a caller's station within one numbering plan area; usually a three-digit central office code followed by a four-digit station number.

DMS

See Digital Multiplex System.

DN

See directory number.

DOS

See Disk Operating System.

ECC

See enhanced calling card.

enhanced calling card (ECC)

A calling card that can be datafilled to provide customers easy access to a variety of card services, including speed dialing, sequence dialing, message delivery, and others, fully automated, with operator backup available

Global Operator Services (GOS)

Operator Services features specific to the international market.

GOS

See Global Operator Services.

HMI

See human machine interface.

human machine interface (HMI)

The series of commands and responses used by service provider personnel to communicate with the DMS-100 Family of switches. Communication takes place through the MAP terminal and other input/output devices.

IC

See inter-LATA carrier.

Intelligent Node Provisioning System (IPS)

Intelligent Services Environment (ISE)

The combination of intelligent switch, intelligent workstation(s), and intelligent service node(s) that enables new applications with heavy processing requirements to be handled off-switch, while still providing total integration with the existing TOPS network.

Intelligent Services Node (ISN)

A NAV-based peripheral that supports new service applications with advanced media processing capabilities, flexible vocabulary recognition, industry-standard operating systems, an open platform architecture, and extensive processing power.

Intelligent Workstation (IWS)

The Nortel Networks programmable operator workstation for traditional and nontraditional operator services

inter-LATA carrier (IC)

Any carrier that provides telecommunication services between a point inside a local access and transport area (LATA) and another point either outside that LATA or inside another LATA.

International Organization for Standardization (ISO)

The organization responsible for creating a seven-layer protocol mode for a data communications network.

IPS

See Intelligent Node Provisioning System.

ISE

See Intelligent Services Environment.

ISN

See intelligent service node.

ISO

See International Organization for Standardization

IWS

See Intelligent Workstation.

LAN

See local area network.

LATA

See local access transport area.

LEC

See local exchange carrier.

LIDB

See line information database.

line information database (LIDB)

An external database developed by the Bell operating companies and used for validating alternate billing requests and potentially used for other applications that must reference an external database, such as originating line number screening.

LNP

See local number portability.

local access transport area (LATA)

A geographic area within which a service provider may offer telecommunications-related services.

local area network (LAN)

A network that permits the connection and communication of multiple computers, primarily for the sharing of resources such as data storage devices and printers.

local exchange carrier (LEC)

The company that provides local telephone service. LECs also include independent local telephone companies.

local number portability (LNP)

A feature that enables customers to retain directory numbers when they change locations, service providers, or services.

message/status area (MSA)

A window on the TOPS IWS screen that is used to relay system, service, and application-specific information to the operator.

MSA

See message/status area.

NPA

See numbering plan area.

numbering plan area (NPA)

Any of the designated geographic divisions of the United States, Canada, Bermuda, the Caribbean, Northwestern Mexico, and Hawaii, within which no two telephones have the same, seven-digit number. Each NPA is assigned as a unique, three-digit area code.

OGT

See outgoing trunk.

OLNS

See originating line number screening.

ONI

See operator number identification.

open position protocol (OPP)

The protocol required to facilitate communication between a TOPS switch and the TOPS IWS terminal.

Operator Number Identification (ONI)

A feature that brings an operator into the circuit to check the calling number when a caller has direct-dialed a long distance call that is to be charged on an itemized bill by CAMA equipment.

Operator Services Signaling Advanced Intelligent Networking (OSSAIN)

The DMS TOPS switch feature that enables open communication in the Intelligent Services Environment.

OPP

See Open Position Protocol.

Originating line number screening (OLNS)

The capability to query a central, shared line information database that contains attributes for millions of directory numbers, so that, for example, various services can be enabled or disabled based on DN.

OSSAIN

Operator Services Signaling Advanced Intelligent Networking

outgoing trunk (OGT)

A trunk used for calls going out to a distant toll center.

personal identification number (PIN)

A unique number used along with an access code or enhanced calling card number to activate a feature or assign billing for a call. The PIN provides security for the card holder against unauthorized use of a feature.

PIN

See personal identification number.

QMS

See Queue Management System.

QMSCASE

See Queue Management System Customer Assistance Service Enhancements.

Queue Management System (QMS)

A software package that provides enhanced capabilities for the management of call queues in the DMS 100/200 Family of switches.

Queue Management System Customer Assistance Service Enhancements

A switch-based feature that permits service assistance and in-charge capabilities to be tied to operator ID rather than hardware, offers capabilities beyond those of traditional service assistance and in-charge positions, and permits CSEs to support normal operator traffic in addition to their support duties.

RAMP

Remote Access Maintenance Position

RAO

See remote accounting office.

Remote Access Maintenance Position (RAMP)

A TOPS IWS position on a token ring or Ethernet LAN that allows support personnel to update all other positions on the same ring.

remote accounting office (RAO)

A telephone company center that uses computers for billing-related data processing, including functions such as the receipt and processing of AMA data and the preparation of a subscriber's bill.

service provider identification (SPID)

The actual operating company of the subscriber, which may be different from the trunk group.

SPID

See service provider identification.

TOPS

See Traffic Operator Position System.

Traffic Operator Position System (TOPS)

A call processing system made up of a number of operator positions, each consisting of a monitor, a controller, a keyboard, and a headset.

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