SL-1
Automatic Call Distribution
Feature description

Contents

List of figures

List of tables

Introduction

Automatic Call Distribution (ACD) is an optional feature. The ACD feature
allows a large volume of calls to the same directory number (called the ACD
DN) to be answered by a group of ACD assigned telephones. Calls are served
on a first-in, first-out basis and are distributed among the available telephones
(called agent positions) such that the agent position that has been idle the
longest is given the first call. This guarantees that the incoming calls are
distributed equally to all agents.

Document overview

The following list identifies the different ACD packages available.

— Base ACD (BACD, package 40)

— ACD basic features (ACD-A, package 45)

— ACD advanced features (ACD-B, package 41)

— ACD management reports (ACD-Cl, package 42)

— ACD load management commands (ACD-C2, package 43)

— ACD auxiliary processor (ACD-D, package 50/5 1)

Allowable package combinations are A, A+B, A+B+C1, and A+B+C1+C2.
Package D replaces package C 1 and provides all of the features of packages
A, B and C2.

This document describes the ACD basic and advanced features packages. The ACD basic features package includes the following:

— Agent features:

  ·   Call Source Identification

  ·   Calls Waiting Indication

  ·   Directory Number key

  ·   Display Waiting Calls key

  ·   In-Calls key

  ·   Log In

  ·   Make Set Busy key

  ·   Night Mode

  ·   Not Ready key

  ·   Release key

— Supervisor features:

  ·   Agent lamps

  ·   Not Ready key

  ·   Display Agents key

  ·   Display Waiting Calls key

System features:

- ACD-CDR Connection Record
- Alternate Call
- Alternate Call Answer
- In-Band ANI (IANI)
- Incoming Trunk restrictions
- Music On Hold
- Night Call Forward (NCFW)
- Night Treatment
- Priority Trunks
- Recorded Announcement

The ACD advanced features package includes the following:

— Agent features:

- Agent and Supervisor communication
- Calls waiting indication
- Emergency key

— Supervisor features:

- Agent key
- Agent lamp
- Agent Observe
- Display Waiting Calls (DWC) key
- Interflow key
- Supervisor and Agent communication
- Supervisor Control of Night Service (NSVC)

— System features:

- Automatic Overflow

- Call Forcing

- Call Interflow

- Customer Controlled Routing (CCR)

- Dialed Number Identification Service (DNIS), including:

- DNIS Across Call Modifications

- DNIS on CDR

- Name Display for DNIS

- Routing by DNIS number

- Enhanced ACD Routing

- Enhanced Overflow

- Hold in Queue for Interactive Voice Response

- Music on Delay

- Priority Agents

- Secondary DN Call Blocking (SDNB)

- Supervisor Control of Queue Size

- Time Overflow (TOF) queuing

Some of these are optional features and depend on certain packages for support and operation. Refer to the software options and dependencies chart in XII *features and services* (553-3001-305).

Music On Hold is available as a separate option. ACD/CDR Connection is bundled with every basic package.

Other documentation

Some ACD systems utilize an Auxiliary Data System (ADS) that requires additional hardware. Customers with ACD-D software for Auxiliary Data Systems (ACD/ADS) should also refer to the ACD-D documents, listed below:

Automatic Call Distribution ACD management reports (553-2671-112) Appendix 1

Application Equipment Module installation guide (553-3201-200)

Meridian MAX Master Index (553-4001-002)

Meridian MAX 3.3-AM Installation (553-4001-101)

Meridian MAX 3.3-AM System Message (553-4001-801)

Meridian MAX 3.3-AM Overview (553-4001-901)

Meridian MAX 3.3 Supervisor's User Guide

Description

A system with the ACD feature is basically divided into two parts: the ACD system and the Meridian 1.

Incoming calls to the ACD part of the system are compiled in a queue by the switch and answered by a group of assigned ACD telephones. Each ACD telephone, called an agent position, is dedicated to a particular ACD Directory Number (DN) (queue).

Each switch can serve up to 100 customers, each customer having many ACD queues. Each queue is defined by its ACD DN. The ACD DN is a unique number of up to seven digits taken from the customer's numbering plan.

Incoming calls are assigned queue positions based on priority and then first-in order. They are then distributed equally to all the active agent positions currently assigned to that particular queue. The system creates two queues for each ACD DN:

— incoming calls

— agent positions ready to receive calls

The system matches available agents with incoming calls. System and ACD limits are shown in the following table.

Table 1
ACD DN based on machine type

Machine Type									
ST	STE	NT	RT	XT	21	21E	51/61	71	81
Maximum number ACD DNs and Control Directory Numbers (CDNs) per customer									
240	240	240	240	240	240	240	240	240	240
Maximum number of agents per system									
Note: With X11 release 19 and later, the maximum number of agents is determined by the LD23 IDUB and IDLB prompts									
120	120	1200	1200	1200	120	120	1200	1200	1200
Maximum number of agents per ACD DN									
120	1200	1200	1200	1200	120	1200	1200	1200	1200

ACD agent telephone types

An ACD agent position is a telephone with an ACD DN assigned. Some agent positions can be designated as supervisors; the agent position status can be switched between agent and supervisor. The ACD system supports both digital and the 500/2500 type telephones.

500/2500

500/2500 telephones can be used as ACD agent positions. This feature allows the telephone to operate both as an ACD agent position and as a standard telephone with an Individual Directory Number (IDN). The 500/2500 telephone has most of the functions of the digital telephone except for the following:

- it cannot be assigned a supervisor status

- it cannot be a virtual agent position

- it can have only one DN appearance, acting as both an IDN and the ACD agent position

500/2500 telephones are not equipped with keys and cannot support features requiring keys or key lamps. For example, these telephones are not supported by the Message Center feature. They can be defined as Message Center ACD agents, but will not support the Message Cancellation (MCK) and Message Indication (MIK) keys. Therefore, it is strongly recommended that 500/2500 agents not be configured in an ACD Message Center. Refer to X11 **and** *services* (553-3001-305) for more information on the 500/2500 telephone and using SPRE codes.

QSU1

The QSU1 telephone is the basic telephone, equipped with the following standard features.

- Handset

  Push Button Dial pad

   Volume Up and Volume Down keys

- Built-in loudspeaker

- Ten programmable feature keys, eight with an associated lamp for visual indications

- Hold key

The number of programmable feature keys can be increased by adding one or more QMT1 or QMT2 add-on modules. The QMT1 has 10 buttons; the QMT2 has 20 buttons.

QSU3

The QSU3 telephone has all the features of the   QSU1 plus a 16-digit display. It shows call source and other information related to both call-processing and other optional features. This telephone should be used when the agent needs to know the source of a call or that a call has been overflowed from another queue. This telephone is also required if the agent position is to be equipped with Time and Date Display or other display features.

QSU7

This telephone type has both the digit display and two jacks (one for headset and one for handset operation), but does not have a built-in handset.

M2216ACD

The **M2216ACD** telephone is available in two versions. They both have the following features:

- fully digital

- two jacks for headset or handset operations

- 15 programmable keys; 16 programmable keys if display is not enabled

  independent volume controls

- Message Waiting indicators

- Display options

- Integrated voice-data calling available with a Meridian Programmable Data Adaptor (MPDA)

- on-hook dialing capabilities

- **NT2K22** 22-Key Expansion Module for expanded functions (optional)

- configured as maintenance telephones; does not support attendant services and attendant key features

M221 **6ACD-1** This basic telephone has two RJ-32 jacks for headset operations.

M2216ACD-2 This telephone has one RJ-32 jack for listen-only headset operation, and one PJ-327 jack for a Carbon headset.

Figure 1 illustrates the M2216ACD telephone with the headset.

ACD display enhancement

Enhanced displays give more information to ACD agents equipped with the M2216 digital telephones.

This information shows the current status and informs the agent of any required actions. Supervisor telephones provide information for implementing the following services.

Figure 1
M2216ACD agent position

553-1328
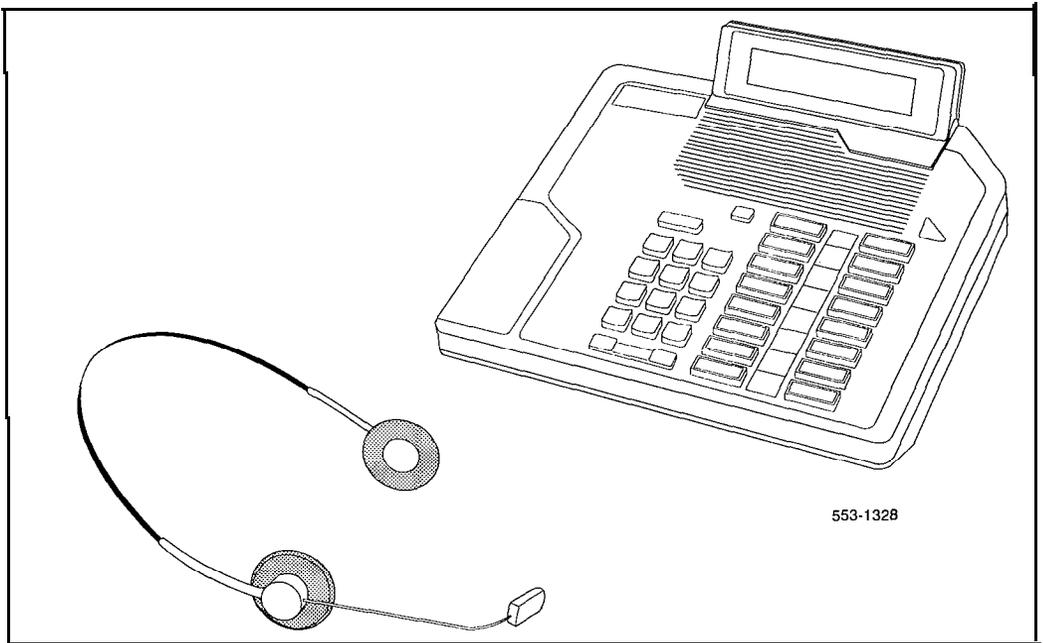
ACNT	Activity Code
AAG	Answer Agent
AMG	Answer Emergency
RAG	Call Agent
DAG	Display Agent
DWC	Display Waiting Calls
Log In	Log In by Agent
MSB	Make Set Busy
OBV	Observe Agent
NSVC	Night Service
TOFQ	Time Overflow Queuing

Refer to
(553-2201-l 16), and the *M2216 user guide* for a more detailed explanation of
telephone operations and examples of the display output.

Feature requirements

Displays require Digit Display (package 19), Digital Sets (package 88), and Meridian Modular Sets (package 170). The system must contain the feature packages required.

Feature packages are only supported on agent positions with the ACD system. The feature drives displays as defined in firmware. The telephone must have a Digit Display Class Of Service (CIS) defined (ADD, DDS).

Feature interactions

The screen displays are event driven and each new event overwrites the previous display. The features must be enabled for the event to occur.

ACD supervisor telephone

It is recommended that the ACD supervisor use a telephone with digit display equipped with sufficient add-on modules to provide the following:

−   one key/lamp pair for each ACD agent in the supervisor's group (up to 58 pairs)

−   one key/lamp pair for each call queue (ACD DN) for which the supervisor's agents are responsible (up to 59)

Operation

This section describes headset operation and the incoming calls and agent queues.

Headset operation

Telephones can be equipped with a plug-in headset. QSU1 or QSU3 telephones can be modified to provide single headset jacks by using the QKN1 kit. When agent positions are equipped for headset operation, tone ringing is replaced by a 3 second buzz tone from the loudspeaker.

The ACD software program creates two queues for each ACD DN.

−   one for incoming calls

−   one for ACD agent positions

Incoming Calls queue

When all agents are busy, the incoming calls are placed in the appropriate incoming call queue on a priority and order-of-arrival basis. They are then presented to agents as the agents become available.

Calls in the incoming call queue can result from one of the following:

- seizing an incoming CO, FX, or WATS trunk arranged to auto-terminate on an ACD DN rather than the attendant
- dialing the ACD DN over an incoming Tie or DID trunk
- calls directed by Incoming Digit Conversion (IDC)
- dialing the ACD DN from a telephone within the system
- attendant extending a call to the ACD DN

An individual trunk is assigned to a specific incoming call queue in service change. A trunk is assigned to only one ACD DN at a time.

Agent queue

If agents are available and there are no incoming calls waiting, the available agents are placed in the designated agent queue on a first-in, first-out basis. The agent who has been idle the longest receives the first incoming call. The following rules apply to ACD agent queues:

An agent can be assigned to only one ACD DN at a time.

The size of the agent queue varies according to the number of agents available to receive ACD calls.

– The maximum number of agents that can be assigned to an ACD DN for efficient call processing for each switch type is listed below.

XT	1000 maximum
NT, ST	500 maximum
STE	500 maximum
RT, VLE, XL, XN	240 maximum
LE, N	120 maximum
M, S, MS	70 maximum
System option 21	500 maximum
System option 21 E	500 maximum
System option 51	500 maximum
System option 61	500 maximum
System option 71	1000 maximum
System option 81	1000 maximum

– ACD DN agent positions are not restricted to a single network loop.

An agent is removed from the queue by any of the following events.

– answering an ACD call

– dialing or answering a call on any other key of the agent position

– enabling the Not Ready (NRD) key

– enabling the Make Set Busy (MSB) key

– unplugging the headset or handset when HOML = Yes (see the *X11 input/output guide* (553-3001-400) LD23 for a complete description)

Figure 2
Diagram of a single ACD queue

Agent
positions

Software assignment

ACD portion of Meridian1 system

X

Supervisor positions

Agent queue   ACD-DN   Call queue

Incoming
auto-terminate
trunks

Status
displays

Recorded
announcements

553-1538
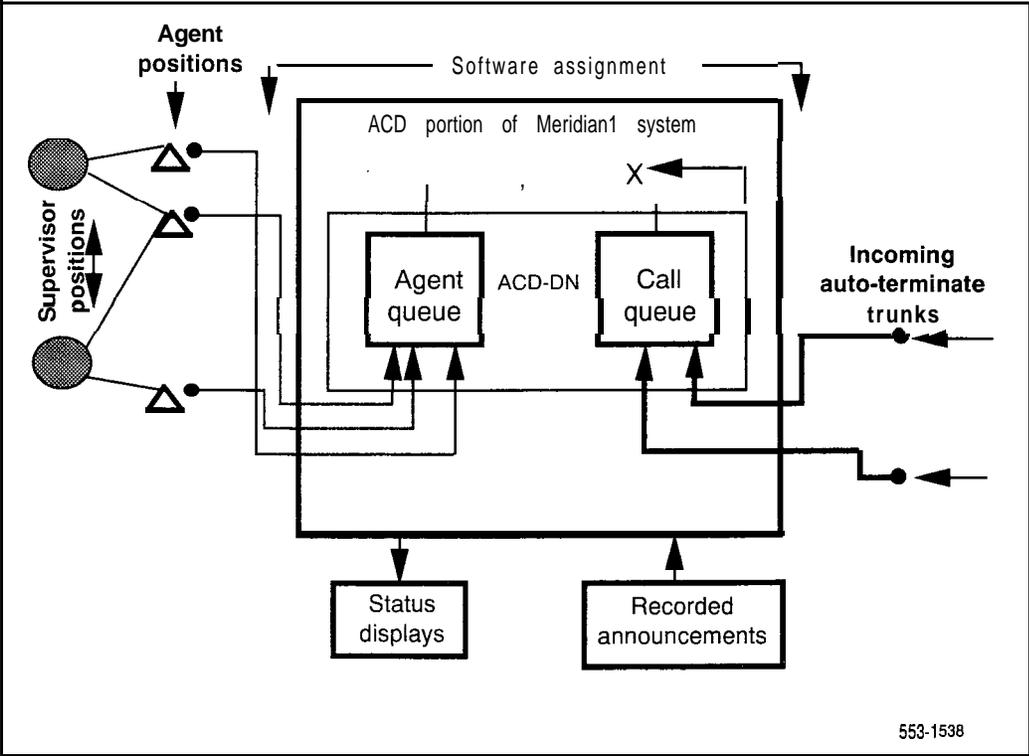
Figure 3
Diagram of multiple ACD queues
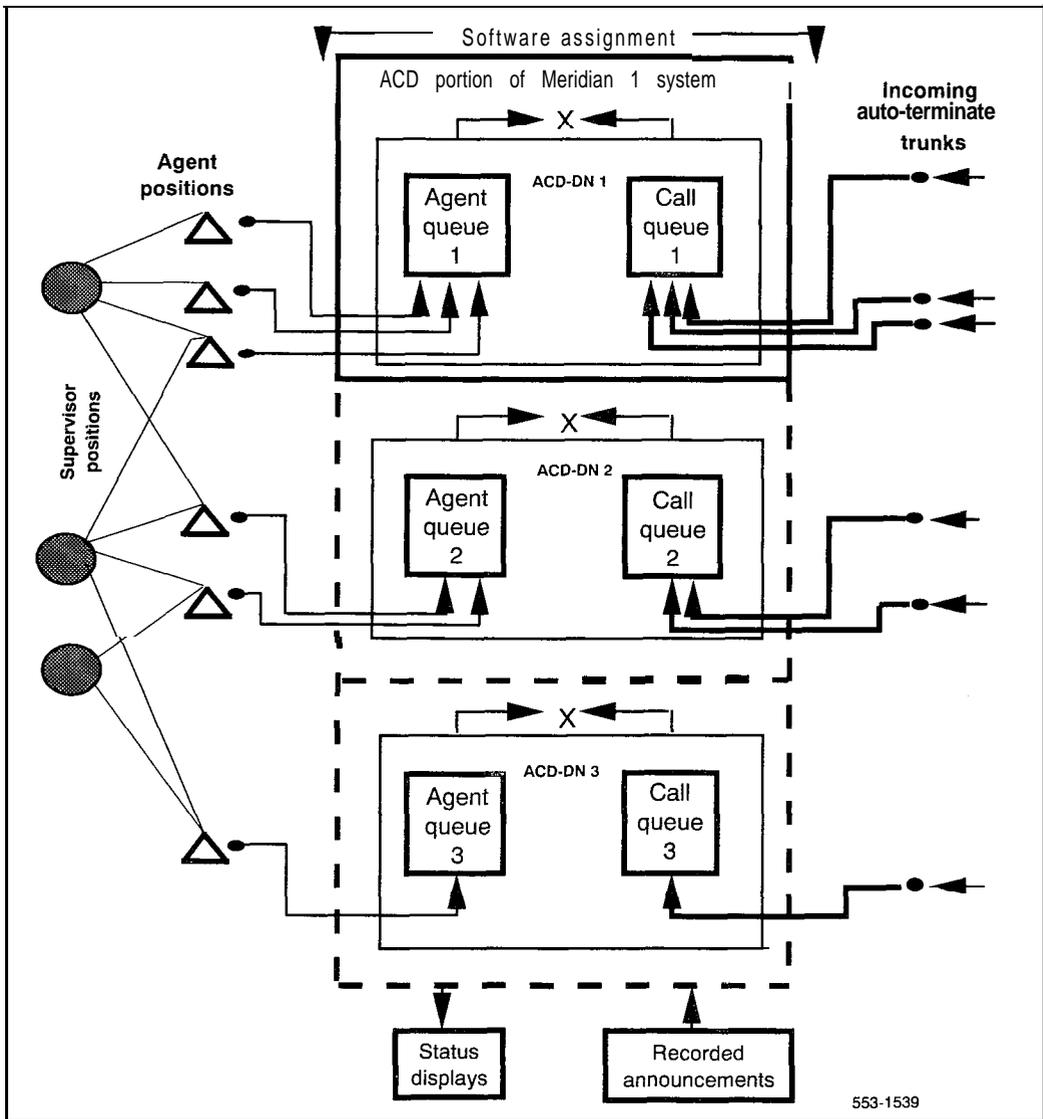
Agent features

This section lists both basic and advanced agent features in alphabetical order. Each feature name is followed by (Basic) if the feature is part of ACD basic features (ACD-A, package 45), and (Advanced) if it is part of ACD advanced features (ACD-B, package 41). For a complete list of the features in each package, refer to "Document overview" on page 1.

Agent and supervisor communication (Advanced)

When an ACD agent is not active on an ACD call, the agent can press the Supervisor key to call the assigned supervisor. The associated lamp on the agent telephone lights steadily and ringback tone is heard. When the supervisor answers, the Supervisor lamp on the agent's telephone remains lit, and the agent and supervisor can talk.

When an agent calls the supervisor, tone ringing sounds from the supervisor's terminal speaker and the Answer Agent lamp flashes. The supervisor answers the call by pressing the Answer Agent key, and the display shows the calling agent's ACD Position Identification (POS ID). The supervisor's Not Ready lamp lights steadily. If the Not Ready lamp is already on, it remains on.

Three-party operation

If the ACD agent is active on an ACD call and presses the Supervisor key, the calling party is put on hold (fast flashing In-Calls lamp). The lamp associated with the Supervisor key lights steadily, and **ringback** tone is heard. When the supervisor answers, the agent and the supervisor can now talk privately.

When the agent presses the Supervisor key a second time, the calling party (on hold with the In-Calls key) is added to the conversation. The Supervisor lamp on the agent's telephone goes dark, and the conference (agent/caller/ supervisor) is established on the agent's In-Calls key. By pressing the RLS key, the agent can leave the conference call and the caller and supervisor remain connected. Alternately, the supervisor can press the RLS key and leave the call. The agent and caller are still connected.

Call Source Identification (Basic)

Call Source Identification is an optional feature using the Digit Display on the agent's telephone. With the incoming call displayed on the screen, the agent is able to respond appropriately to the caller. For calls coming from incoming trunks, the trunk access code and the member number of the trunk are shown. For internal calls, it shows the DN of the calling telephone.

The ACD agent position can be equipped with other additional features. These features are described in *X1 1   and services* (553-3001-305). Non-ACD features can also be assigned to the DN key of an ACD telephone.

Calls Waiting Indication key (AWC) (Basic)

ACD telephones may be equipped with Light Emitting Diodes (LEDs) or Liquid Crystal Display (LCD) indicators to show the agent status in ACD queues. The indicator states are determined by the threshold values telephone in administration programs. Refer to *Automatic Call Distribution ACD management reports* (553-2671-112) for a complete description.

Depending on the threshold values defined for each ACD DN, Call Waiting indicators can display the following states.

Dark or Blank The queue load is light or empty.

Steadily lit At least one call is waiting, but the load is within normal limits.

500/2500 telephone If call waiting and warning tone are allowed in the telephone class of service, call waiting for external calls operates. If the agent is busy on an IDN call and another IDN call comes in, the call waiting treatment is allowed. If the agent is busy on an ACD call, the incoming IDN call receives a busy tone.

Calls Waiting Indication key (AWC) (Advanced)

Telephones for an ACD system are equipped with Light Emitting Diodes (LEDs) or Liquid Crystal Display (LCD) indicators to show the call status in ACD queues. The indicator states are determined by the threshold values set in administration programs. Refer to XI *I input/output guide (553-3001-400)* for a complete description.

The call waiting indicator relies on thresholds associated with Automatic Overflow. The Call Waiting Threshold (CWTH), Busy Threshold (BYTH), and Overflow Threshold (OVTH) govern Automatic Overflow and provide steady, flashing, and fast flashing lamps.

In X11 release 15 two prompts allow the lamp states to operate independently of the Automatic Overflow parameters. Call Waiting Lamp Flash (CWLF) and Call Waiting Lamp Fast Flash (CWLW) can be configured to flash and fast flash the lamps even though the Automatic Overflow parameters have not been met or exceeded.

Depending on the threshold values set for each ACD DN, the LEDs and LCDs display the following states.

— **Dark or Blank** The queue is empty, or the number of calls in the queue is less than the Calls Waiting Threshold (CWTH).

— **Steadily lit** The CWTH has been met or exceeded. The number of calls in the queue is less than the Call Waiting Lamp Flash (CWLF) threshold.

— **Flash** The CWLF threshold has been met or exceeded. The number of calls in the queue is less than the CWLW.

· Slow **flash** (60 ipm) Busy. The number of calls waiting in this queue exceeds the busy threshold set for this ACD DN.

· **Fast flash** (120 ipm) Overloaded. New calls to this ACD DN will attempt to overflow to another programmed destination.

Directory Number key (Basic)

When an agent presses a DN key to make or receive a call, any other call in progress is automatically released (unless on hold).

When the call on the DN key is released, the agent position is automatically returned to whatever state it was in before the DN key was pressed. Any call being presented to the In-Calls key but not yet answered by the agent when the DN key is pressed, is moved back to the head of its priority grouping in the incoming call queue for the ACD DN.

The DN lamp flashes slowly when an incoming call to the DN is connected to the telephone. It is lit steadily while the call is in progress and flashes quickly if the call is placed on hold. Activating the Make Set Busy (MSB) key prevents DN calls from being connected to the agent position. With X11 release 17 and earlier, the agent cannot depress the Hold key when on a DN call and receive an ACD call. Xl 1 release 18 and later allows this with Alternate Call Answer. Refer to the Alternate Call Answer section for more information.

Display Waiting Calls (DWC) key

A Display Waiting Calls key can be assigned to ACD agent sets. This feature, which has been available on ACD supervisor sets, is available for agent sets in X11 release 19 and later. An ACD DN can be programmed on a DWC key on any number of agent telephones.

The lamp associated with the Display Waiting Calls key provides summary information on the calls-waiting status for the ACD DN. A lamp that is steadily lit means there is more than one call waiting in the queue.

When the DWC key is pressed, the Calls-Waiting status for the ACD DN is displayed as follows:

aaa — bbb — ccc — dddd

legend:

aaa = the number of calls currently waiting in the queue

bbb = the number of agent positions manned for the ACD DN

ccc = the waiting time in seconds of the oldest call in the queue

dddd = always zero (0) with Basic ACD

This information is updated every time the key is pressed, and remains visible until an event occurs to modify the display. Typical events include an incoming call, or the pressing of the DN or Release key.

Operating parameters

The agent telephone can have either the AWC or the DWC key defined, but not both.

The DWC key ACD DN designation has to match the agent's In-Call designation.

Beginning with Xl 1 release 19, a Display Waiting Calls key for a particular ACD DN can be assigned to every ACD agent in the queue.

Display Waiting Calls (DWC) key (Advanced)

A Display Waiting Calls key can be assigned to an agent position for each ACD DN. The Display Waiting Calls reflects all calls that are in queue, but have not been presented.

The call waiting indicator relies on thresholds associated with Automatic Overflow. The Busy Threshold (BYTH) and Overflow Threshold (OVTH) govern Automatic Overflow and provide steady, flashing, and fast flashing lamps.

Beginning with Xl 1 release 15 two prompts allow the lamp states to operate independently of the Automatic Overflow parameters. Call Waiting Lamp Flash (CWLF) and Call Waiting Lamp Fast Flash (CWLW) can be configured to flash and fast flash the lamps even though the Automatic Overflow parameters have not been met or exceeded.

Depending on the threshold values set for each ACD DN, the following states display. The information on the Display Waiting Calls key is updated every time the key is pressed.

— **Dark or Blank** The queue is empty, or the number of calls in the queue is less than the Calls Waiting Threshold (CWTH).

— **Steadily lit** The CWTH has been met. The number of calls in the queue is less than the Busy Threshold (BYTH) or the Call Waiting Lamp Flash (CWLF) threshold, or both.

— **Flash** The BYTH or the CWLF threshold, or both, has been met. The number of calls in the queue is less than the Overflow Threshold (OVTH) or the Call Waiting Lamp Fast Flash (CWLW) or both.

— **Fast flash** The OVTH or the CWLW, or both, has been met or exceeded.

When the key is pressed, the Calls-Waiting status for the ACD DN is displayed as follows.

a a a - b b b - c c c - d d d d

Legend:

a a a = calls waiting in queue
b b b = Agent positions occupied

ccc = waiting time for the oldest call in the queue

d d dd = sum of all calls in other source TOF queues, call request queues from other network locations targeting this ACD DN, and CCR calls

Emergency key (Advanced)

In the event of threatening or abusive calls, an agent can note the trunk access code and trunk member number shown on the display. The agent presses the Emergency (EMR) key, establishing a no-hold conference with the supervisor (if one is assigned). The agent must remain in the conference for the duration of the call. At the supervisor's telephone, the Answer Emergency lamp flashes and continuous buzzing sounds. The ACD POS ID of the calling agent is displayed on the display of the supervisor's telephone. If equipped by the customer, a tape recorder can be used to record the call, or an emergency message can be typed on the maintenance TN, or both.

When the agent presses the Emergency key, the associated lamp indicates the action being taken as follows.

- **Dark** Neither supervisor nor recording trunk is available. The supervisor may be busy on another emergency call, may be unassigned, or the telephone is not equipped with an Answer Emergency key. In addition, the recording trunks may all be busy or unassigned.

- Flashing The supervisor is available, but has not yet answered the emergency call.

- Steadily lit The supervisor or recording trunk, or both, are conferenced into the call.

When answering an emergency call, the supervisor listens through the built-in loudspeaker by leaving the handset on-hook or the headset unplugged. The supervisor can also put the emergency call on hold, without affecting the agent or caller, to make another call or perform another action. The supervisor returns to the emergency call by pressing the Answer Emergency key again. The Answer Emergency lamp fast flashes (120 ipm) while the call is on hold.

The recording device connects to a paging trunk with a Recorder (RCD) defined in software. When the agent presses the Emergency key, the recorder is conferenced into the conversation.

Paging trunk connections The input impedance of a typical tape recorder is 47 KΩ, but the output impedance of the paging trunk is switch selectable for 600 or 900 Ω. Therefore, it may be necessary to add a 600 or 900 Ω resistor parallel with the tape recorder input to properly terminate the paging trunk.

Emergency Teletype messages

When the agent presses the Emergency key, the following messages may be generated on the maintenance teletype.

> EMR 100 RC L S C U RR MMM
>
> EMR 100 AG XXXX YYYY
>
> EMR 100 OR L S C U RR MMM

Legend:

RC	= Recording trunk for emergency recorder
L	= Loop for recording trunk
S	= Shelf for recording trunk
C	= Card for recording trunk
U	= Unit for recording trunk
RR	= Route number for recording trunk
M M M	= Member number for recording trunk
AG	= Agent has pressed the Emergency key
XXXX	= the ACD DN assigned to that agent
YYYY	= the Agent Position ID (POS-ID)
OR	= the originator

Prior to X11 release 14, the ACD DN and the POS ID digits are given in reverse order. The character "A" signifies a "0" and the digit "0" signifies the end of the number. For example, the ACD DN "01A4" would denote "401" and POS ID "5412" would denote "2145."

XI 1 release 14 and later displays the ACD DN and Position ID as they actually are. For example, ACD DN 301 appears on the printout as 301.

The letters L S C and U denote loop, shelf, card, and unit identifiers of the call origin. If the call is coming into the system, the RR and MMM parameters show the route and member numbers of the trunk. If the originating call is from within the system, these two fields are absent.

In-Calls key (Basic)

Meridian 1 telephones may have the In-Calls key programmed to be associated with an ACD DN, except the 500/2500 telephones, as they do not have key lamp functions. The Position ID functions apply to all ACD telephones.

Calls within ACD are presented on the In-Calls key at the agent position. The position identifier (POS ID) is a number identified with the In-Calls key. The POS ID is a unique number from the customer's numbering plan. This number identifies the agent position for Automatic Number Identification (ANI), Automatic Identification of Outward Dialing (AIOD), and Call Detail Recording (CDR) purposes. This number cannot be the same as the ACD DN and *cannot* be used to call the ACD agent position. The In-Calls key is always located on key 0 (bottom key) on the agent position.

When an incoming ACD call is presented to an agent position, the following events occur:

- Tone ringing is heard if the telephone is equipped with a built-in handset and the telephone is not in use.

- A 3 second tone sounds from the telephone loudspeaker if the telephone is equipped with a headset or plug-in handset.

- The In-Calls lamp flashes slowly (60 ipm).

An incoming ACD call can be terminated in the following ways.

- If the caller disconnects first, the call is released and the next call is presented.

- The agent disconnects first by pressing the In-Calls key. This releases the current call and the next call is presented.

- The agent presses the DN key.

- The agent presses the Not Ready key.

- The agent presses the Release key.

Calls can be automatically connected to an agent in the answered state by the advanced Call Force feature. When an agent is available, a call can be presented.

Note: Calls extended by the attendant to the ACD DN are not automatically returned to the attendant if they remain unanswered past the attendant recall threshold.

Log In (Basic)

Agents must log in before performing any agent functions. Each ACD telephone has a Position ID. To log in with the MSB key, the agent presses the key, and the MSB lamp goes out. The agent position is now in the operative mode.

An ACD agent at an ACD telephone can log in and out by toggling the MSB key between the operative mode and the MSB mode.

Optionally with the ACD-Cl or ACD-D package, each agent who uses an ACD agent position can be assigned an Agent ID or a position ID. To log in with the Agent ID, go off-hook and dial the Agent ID. Press the In-calls key to begin receiving ACD calls. To log in using the Position ID, go off-hook and press the In-calls key. Press the In-calls key again (or the Not Ready key) to begin receiving ACD calls.

Data agents   Data agents can log in using the MSB key if the Data Shift key on the Add-on Data Module (ADM) is lit. Refer to the ACD-C document, *Automatic Call Distribution ACD management reports* (553-2671-102) for a description of Data agent login methods.

500/2500 telephone The agent logs in with a SPRE code plus 97 and is notified of the telephone state with a specific tone.

> *Note:* The Call Forward and Message Waiting dial tones take precedence over the ACD Logged In dial tone.

When the telephone is idle and the agent is not logged in, a standard dial tone sounds when the handset is lifted. To log in, the agent lifts the handset and enters the SPRE code plus 97. Replacing the handset places the agent position in the idle agent queue.

The agent can also log in with the Agent ID number by entering the SPRE code plus 97, and the 4 digit Agent ID number. When the agent goes off-hook again, the Log In tone sounds.

> *Note:* A busy tone indicates that an Agent ID login number is not unique. If the ID number is invalid, an overflow tone sounds.

Log Out (Basic)

To log out, the agent enters the SPRE code plus 97, and goes on-hook. The agent is now logged out, and a standard dial tone sounds when the telephone is off-hook.

Beginning with Xl 1 release 19, M2216, M2008, and M2616 telephones equipped with display units and ACD package D display the **LOGGED OUT** message when the Make Set Busy (MSB) key is de-activated by:

- · Disconnecting the headset or handset, if HOML (Handset On-Hook Means Logout) is enabled in Overlay 23

- · Placing the handset on-hook

When HOML is not enabled in LD23, the Make Busy key must be used to log out. If no Make Busy key is available, the agent must use the headset or handset to log out. The moment an agent logs out:

- · The agent position is removed from the ACD idle agent queue.

- · All reporting against that position stops.

For ACD package C or D, if customer Load Management commands (SAPA/ SAGP/SATS) are issued, the effects of these commands do not take place until the agent logs out.

With X11 release 19 and later and ACD packages C or D, if the MSB key is de-activated and the telephone includes a display unit, the display is updated with the **LOGGED OUT** screen.

The Log Out command clears the Not Ready mode. If not logged in, the agent cannot activate Not Ready mode.

Note: The MSB key can be used to log out even if the agent logged in with P=Agent or Position ID. Pressing the MSB key while on a call logs the agent out when the call is completed.

Make Set Busy key (Basic)

Meridian 1 ACD digital telephones may have the Make Set Busy key programmed, except for the 500/2500 telephone, as it does not have this key or lamp function.

The Make Set Busy (MSB) key causes an agent position to appear busy to the system, preventing the agent from receiving any calls. Activating the Make Set Busy (MSB) key removes the agent from the queue, and logs out the agent from the system. The MSB lamp is steadily lit, and the DWC key display is cleared.

Calls presented to but not answered by this agent return to the top of the same queue from which they came. Pressing the MSB key will not disconnect an active call, but prevents further calls from being presented to that agent position. Neither IDN nor ACD calls can be received while the MSB key is activated. The agent can, however, originate calls from the DN key.

When the MSB key is deactivated, the agent receives incoming IDN calls. The agent must log in to receive ACD calls.

If all the agent positions assigned to an ACD DN are in the MSB mode, that ACD DN is automatically placed into Night mode. ACD Night mode is independent from the Night Service activated at the attendant console, and can be different for each ACD DN. See *X11 features and services* (553-3001-305) for more information.

Night Mode (Basic)

When an ACD DN is in the Night Mode, the agent queue does not send new calls to that ACD DN or number. Depending on the customer option, callers can be connected to a Recorded Announcement or forwarded to another ACD DN. See *X11*   (553-3001-305) for more information.

50012500 telephone The telephone is automatically placed in Night Mode by the agent entering the SPRE code plus 97. By doing this, the agent performs a log off from the system.

Not Ready key (Basic)

An agent, after completing an ACD call, may need time to perform tasks before accepting another call. This is post call-processing. When the agent presses the Not Ready (NRD) key, the agent is removed from the agent queue and the NRD lamp is lit steadily.

Beginning with Xl 1 release 19, **M2216ACD**, M2008, and M2616 telephones with display units indicate **NOT READY.**

While the agent position is in the Not Ready state, the agent may receive or originate calls using the DN key, but ACD calls cannot be connected to the In-Calls key. When the agent's post call tasks are finished, the agent presses the NRD key. The Not Ready lamp goes out, and the agent is placed in the agent queue. It is also possible for the agent to press the In-Calls key to cancel Not Ready and reenter the queue. When the NRD key is pressed, any call presented to the In-Calls key (but not yet answered by the agent) is moved back to the head of its priority grouping in the incoming call queue for the ACD DN.

500/2500 telephone Since 500/2500 telephones do not have key lamps, the telephone is placed in the Not Ready state by typing SPRE + 98. A specific tone informs the agent that the telephone in this state.

> ***Note:*** The Call Forward and Message Waiting, the Call Forward, and the Message Waiting dial tones take precedence over the ACD Not Ready dial tone.

When the telephone is idle and logged in, the agent lifts the handset and enters the SPRE code plus 98 to activate the Not Ready feature. Replacing the handset takes the agent out of the queue and completes the Not Ready feature activation.

When the agent lifts the handset again, the Not Ready tone sounds. Calls are still received on the telephone's DN. To return to the queue, the agent lifts the handset and reenters the SPRE code plus 98. Replacing the handset places the agent back in the idle agent queue, completing the Not Ready process.

When the agent lifts the handset again, the Log In tone sounds and the telephone is in the Ready mode. The agent must be logged in to activate the Not Ready mode. If the agent logs out, the Not Ready state is cleared.

Release key (Basic)

The optional Release (RLS) key may be assigned in place of, or as well as, the Not Ready key if there is not a requirement for post-call work. When an agent disconnects from a call by using the RLS key, the agent position is immediately placed in the agent queue.

500/2500 telephone The 500/2500 telephone does not have a Release key. To release a call, the agent hangs up. If the other party disconnects first, the agent must still hang up to release the call connection.

Supervisor features

This section lists both basic and advanced supervisor features in alphabetical order. Each feature name is followed by (Basic) if the feature is part of ACD basic features (ACD-A, package 45), and (Advanced) if it is part of ACD advanced features (ACD-B, package 41). For a complete list of the features in each package, refer to "Document overview" on page 1.

The keys on the supervisor's telephone are set up to provide visual indications of agent and queue status.

Agent key (Advanced)

The Agent keys are used in conjunction with the Observe Agent and Call Agent keys to select the specific agent to be observed or called. The selection of the individual agent may be made anytime the Observe Agent lamp or Call Agent lamp is lit. Otherwise, any operation of the Agent key is ignored.

Agent lamps (Basic)

Up to 40 **SL-1** telephone key/lamp pairs can be assigned to agent functions. The M2216 set with 2 Add on modules supports up to 58 keys. The key associated with each lamp is not used unless equipped with ACD advanced features. The lamps show the state of individual agents in the supervisor's group. An agent can only be assigned to one supervisor at a time. These are updated whenever the status of the agent changes, independent of the supervisor's mode of operation (Agent/Supervisor/Make Set Busy).

The lamps can be in the following states:

- **Dark** The agent position is not manned.

- **Steadily lit** The agent is busy on an ACD call or is in the Not Ready mode.

- Slow **flash** (60 ipm) The agent is waiting for an ACD call.

- **Fast flash** (120 ipm) The agent is busy on a non-ACD call.

Agent lamp (Advanced)

With the ACD basic features, a steadily lit lamp associated with an Agent key means the agent is either handling an ACD call or is in the post-call processing mode (Not Ready lamp lit). The ACD advanced features provides an option for a Separate Post-Call Processing (SPCP) indication on the Agent lamp. The SPCP option is enabled/disabled through the ACD LD23. When the SPCP option is enabled, the Agent lamp can assume any one of the following states.

- **Dark** The Agent position is not manned.

  Steadily Lit The Agent is handling an ACD call.

- **Flash** The Agent is waiting for an ACD call (60 ipm).

- **Fast Flash** The agent is busy with post-call work (Not Ready lamp lit) or is engaged in a non-ACD call (120 ipm).

Agent Observe (Advanced)

To observe the quality of service being offered to callers, the supervisor can monitor calls terminating on any key of any ACD agent. During Agent Observe, the supervisor is able to hear both the calling party and the agent, but cannot participate in the conversation. The supervisor can enter the conversation by pressing the Call Agent (RAG) key while in the Observe mode. This creates a conference situation, where the supervisor can participate in the conversation with the agent and the calling party.

If the supervisor presses another Agent key, the supervisor's speech path is disconnected and the Observe mode is restored. If the supervisor presses any key other than the RAG key, the Observe function ends.

A supervisor can observe any agent in the ACD operation by pressing the Observe Agent (OBV) key then dialing the Position ID or the AGT key assigned to a particular Agent.

A supervisor with Allow Observation of Supervisor Class of Service can observe another supervisor in the ACD operation by pressing the Observe Agent (OBV) key and dialing the Position ID of the supervisor observed.

Agent Observe monitors an ACD agent position until the feature is deactivated. The supervisor does not have to reactivate the feature for each incoming call. If the feature is left on, each call presented to that agent is observed by the supervisor.

If a call is presented to a supervisor but not answered, and the supervisor presses the OBV key, the call is presented to another agent if available. Otherwise, the call is placed at the head of the ACD queue. If an EAR call is presented to an agent and the supervisor pressed the Observe key, the call is presented to the agent without being affected by the observe function.

Observe Agent key

When the supervisor presses the Observe Agent (OBV) key, and an appropriate Agent key, a periodic warning tone is supplied. This warning tone lasts 256 ms and is repeated every 16 seconds. With X11 release 14 and later, you can specify in your system that the tone be heard by the Agent (OBTN = AGT), the caller and agent (OBTN = ALL), or neither (OBTN = NO).

If the Observe Warning Tone is specified in LD23 (OBTN prompt), the ACD agent being observed hears an intermittent tone.

Silent Observe As in the Observe Agent basic package, there is no indication that an agent is being observed except on the supervisor's telephone. This is the default setting for the system (OBTN = NO).

Observe Warning tone This option provides an intermittent tone to the agent's telephone when the agent is being observed. No other parties in the call receive the tone. To select this option, specify OBTN = AGT in LD23.

Audible tone Specify OBTN = ALL in LD23 for all parties in the call to receive the intermittent tone warning that the call is being observed.

Pressing one Agent key after another results in observation of each agent. The agent being observed is identified by POS ID on the supervisor's display. If any monitored agent needs the supervisor's help, the supervisor presses the Call Agent key and is connected into the call. During agent observe, any operation of the Hold key on the supervisor's telephone is not enabled. The supervisor can press any other key to terminate the observe.

The supervisor cannot observe an agent while the agent is establishing a conference call. Therefore, if the observed agent is establishing, or begins establishing, a conference at the time of observation, the observation is discontinued until the conference set-up is complete. If the agent activates Call Transfer, any supervisor observation is suspended.

If there is no conference loop available when the supervisor activates the OBV key, the associated lamp flashes to show that Observation is not possible at this time. When a conference loop is available, the lamp is steadily lit and the supervisor can observe an agent.

Intercept treatments

The following intercept treatments occur when a supervisor activates Observe Agent, or Call Agent:

— Busy tone if the telephone is currently being observed by another supervisor

— Overflow **tone** for non-ACD telephones and invalid POS **IDs**

— **Overflow tone** if the supervisor does not have Allow Observation of supervisor CLS when trying to observe another ACD supervisor

Feature interactions

Hold The audible tones for Agent Observe are not presented when an agent presses the Hold key. The tones are returned when the call on hold is restored.

Call Agent Using the Call Agent (RAG) key, the supervisor's voice path is enabled and a normal conference exists between the supervisor, agent and calling party.

The observed agent does not need to receive a supervisor's signal with the Answer Supervisor (ASP) key. The supervisor is automatically connected into the call and the Observe Tone continues to all call parties. When the supervisor uses the AGT key again, the conference stops and the Observe state is restored.

Conference Calling An ACD Agent must have at least as many conference time slots available as possible parties on each call. If an agent activates a Conference Call while being observed, the tone is suspended while the conference is being set up, and returned to all involved parties when the call is active again. Internal callers to an agent being observed cannot activate a Conference Call; only an external caller or the agent can initiate a conference.

Call Transfer Observe Tone is suspended while a call is being transferred and is restored only if the transfer is not completed (the call remains with the observed agent), or if the transfer telephone is also being observed and has observe tone allowed.

Make Set Busy An agent cannot log out while active on a call. Observe tone is continuous until the call is complete and the agent logs off.

Emergency (EMR) key With Audible Tone enabled it is not necessary for the agent to use the EMR key because the agent already knows when the supervisor is listening. However, if the agent does use the EMR key, the supervisor has an active speech path after pressing the Answer Emergency key. Agent Observe is suspended when the supervisor uses the AMG key to accept the agent's EMR signal.

Attendant Barge-In/Busy Verify The Barge-In/Busy Verify warning tone is given to all call parties along with the Observe Tone. The Barge-In/Busy Verify tone repeats every 6 seconds, while the Observe Tone repeats every 16 seconds.

End-to-End Signaling With X11 release 17 and earlier, neither the agent nor the caller can use EES while the agent is in Silent Observe. With X11 release 19 and later, EES is supported for the agent or caller while Silent Observe is operating. Also in X11 release 19 and later, EES sends a special feed back tone to the call originator and a Dual Tone Multi Frequency (DTMF) tone to the terminating party. The feedback tone is synchronized with key depression by the call originator.

> *Note:* The improved EES feature only affects end-to-end signaling between two telephones. There is no change in the end-to-end signaling for telephones on a conference call.

Operating parameters

Data calls or calls to data telephones are not subject to Agent Observe.

Supervisors can only observe an established active call on an ACD telephone with an In-Calls key defined. An ACD telephone *cannot* be observed during the following call states:

— idle

— telephone is already being observed, or the supervisor to be observed is in the observe mode

— the call is connected to a Release Link Trunk

— the call involves an attendant

— private line calls

— conferencing calls

— transferring calls

> *Note:* The observation connection is retried every 256 ms. When the call state changes so that observation is allowed, an observation conference is established.

With the Silent Observe feature of ACD, End-to-End Signaling generated by an agent or customer cannot be heard by the supervisor. The supervisor hears a click resulting from the path being idled between the agent and the far end as End-to-End Signaling digits are pressed.

Supervisors must allow observation of supervisor CLS to observe other supervisors.

The ability to dial access a Position ID may eliminate the need for key/lamps on a supervisor's telephone. Eliminating the key/lamps affects other features as defined below.

— Agent status information from the agent lamp is no longer available.

— The Display Agents key does not function.

To eliminate the agent key/lamp functions and maintain agent-to-supervisor assignments, the agent's telephone can be associated with a Supervisor Position Identification (SPID). Agent key functions, like call supervisor or emergency, continue to operate normally.

Display Agents key (Basic)

A Display Agents key provides a summary of the status of all agents with AGT keys assigned to the supervisor. It gives a count of the number of agents in each of the four states at the moment the key is pressed. The following display is updated every time the Display Agents key is pressed.

$$aa-bb-cc-dd$$

where:

aa = the number of agents busy on ACD calls or in the Not Ready mode

bb = the number of agents waiting for ACD calls

cc = the number of agents busy on non-ACD calls

dd = the number of agent positions not manned

If the associated agent keys have not been configured or the agent position has not been configured, the display shows 00 in each of the fields described above.

Display Waiting Calls (DWC) key

A Display Waiting Calls key can be assigned to a supervisor position for each ACD DN. The Display Waiting Calls key on the supervisor's telephone shows a measure of calls waiting that includes all calls that are in queue, but have not been presented to an agent (i.e., ringing on the agent's telephone).

The information on the Display Waiting Calls key is updated every time the key is pressed.

When the key is pressed, the Calls-Waiting status for the ACD DN is displayed as follows:

$$aaa - bbb - ccc - dddd$$

legend:

aaa = the number of calls currently waiting in the queue

bbb = the number of agent positions manned for the ACD DN

ccc = the waiting time in seconds of the oldest call in the queue

dddd = This field is always zero (0) with Basic ACD and does not apply.

The lamp associated with the Display Waiting Calls key provides summary information on the calls-waiting status for the ACD DN. When steadily lit, it means there is more than one call waiting in the queue. A Display Waiting Calls key for a particular ACD DN can be assigned to a maximum of eight supervisor positions regardless of the number of supervisors.

Display Waiting Calls (DWC) key (Advanced)

A Display Waiting Calls key can be assigned to a supervisor position for each ACD DN. The Display Waiting Calls key on the supervisor's telephone shows a measure of calls waiting that includes all calls that are in queue, but have not been presented to an agent. Each ACD DN can be programmed on a DWC key on up to eight supervisor's telephones.

The call waiting indicator relies on thresholds associated with Automatic Overflow. The Busy Threshold (BYTH) and Ovefflow Threshold (OVTH) govern Automatic Overflow and provide flashing and fast flashing lamps.

In Xl 1 **release** 15 two prompts allow the lamp states to operate independently of the Automatic Overflow parameters. Call Waiting Lamp Flash (CWLF) and Call Waiting Lamp Fast Flash (CWLW) can be configured to flash and fast flash the lamps even though the Automatic Overflow parameters have not been met or exceeded.

Depending on the threshold values set for each ACD DN, the following states display. The information on the Display Waiting Calls key is updated every time the key is pressed.

— **Dark or Blank** The queue is empty, or the number of calls in the queue is less than the Calls Waiting Threshold (CWTH).

— **Steadily lit** The CWTH has been met. The number of calls in the queue is less than the Call Waiting Lamp Flash (CWLF) threshold.

— **Flash** The CWLF threshold has been met. The number of calls in the queue is less than the Call Waiting Lamp Fast Flash (CWLW).

— **Fast flash** The OVTH has been met or exceeded.

When the key is pressed, the Calls-Waiting status for the ACD DN is displayed as follows.

aaa-bbb-ccc-dddd

Legend:

aaa	= calls waiting in queue
bbb	= Agent positions occupied
ccc	= waiting time for the oldest call in the queue
dddd	= sum of all calls in other source TOF queues, call request queue from another network location targeting this ACD DN, and CCR calls

Interflow key (Advanced)

The Interflow (ENI) key allows the supervisor, during excess traffic periods, to redirect incoming ACD calls to another predesignated DN, either on the same switch or through the external switching network to another telephone. Each Interflow key is associated with two DNs.

- an ACD DN (source queue)

- an Interflow DN (IFDN). The IFDN can consist of up to 23 digits, including any required access code or asterisk (*) to indicate dialing pause.

Only one Interflow key may be assigned to each ACD DN. The Interflow key must be accompanied by a DWC key for that ACD DN.

Interflow supplements Automatic Overflow. When a source queue meets or exceeds the threshold set for Automatic Overflow, the system checks all target queues (OVDNs). If the target queues meet or exceed the BYTH, or are in Night treatment, the incoming calls do not Overflow.

When this overload condition exists, the supervisor is alerted by the DWC key fast flashing. The supervisor presses the Interflow key, and incoming calls meeting or exceeding the OVTH are interflowed to the IFDN.

The ENI key lamp flashes when the supervisor presses the key. It continues flashing until the key is pressed again and the feature is turned off. The flashing does not mean that calls are interflowing, simply that the feature is activated.

The Overflow status must be determined by the supervisor since calls should Interflow to a destination that is not overloaded. The status of the target DN cannot be determined automatically. After activating Interflow, the supervisor should monitor the status of the call queues to decide when to disable Interflow by pressing the ENI key again.

If the Interflow destination is outside the Meridian 1 system, sufficient outgoing trunks should be available to handle the expected volume of outgoing traffic when the Interflow key is activated. Refer to the Enhanced Interflow section for a description of automatic Interflow from source queues.

Malicious Call Trace key

The Malicious Call Trace (TRC) key is supported on supervisor sets beginning with X1 1 release 19.

Not Ready key (Advanced)

Pressing one of the following supervisor feature keys turns on the Not Ready key LED. Beginning with X1 1 release 19, M2216ACD, M2008, and M2616 telephones with displays also show the message NOT READY.

- Observe Agent
- Call Agent
- Answer Agent
- Answer Emergency

When any of these feature keys are activated, the supervisor does not receive ACD calls on the Incalls key.

To receive ACD calls, the supervisor presses the Not Ready key again (Not Ready lamp goes dark) and is placed in the agent queue in the normal manner.

If a call is sent to an agent and the agent activates the Not Ready key, the EAR call is then placed at the head of its priority grouping call queue (of the agent group to which the call was connected). This ensures that the call is connected to the next available agent.

Supervisor and agent communication (Advanced)

The supervisor calls an agent by pressing the Call Agent (RAG) key. The Call Agent lamp lights steadily, and the supervisor presses the appropriate Agent key, or dials the agent's Position ID, to complete the call. The display shows the called agent's ACD POS ID. To call another agent, the supervisor presses another Agent key. The call to the previous agent is terminated, and the second call is placed. The dial method requires that the supervisor press the agent key before any Position ID is dialed.

The Call Agent and Answer Agent functions are separate keys on the supervisor terminal. The supervisor can call an agent without having to answer all the agents attempting to talk to the supervisor. A supervisor can call only one agent at a time.

When the supervisor calls an agent, the agent's supervisor lamp flashes and the agent hears tone ringing. If the agent is busy or off-hook, the agent hears a 3-second buzz from the receiver. The agent answers the call by pressing the Supervisor key. If the agent is engaged in a call, the call must first be put on hold by pressing the Hold key, before the Supervisor key is pressed.

The supervisor answers the agent call by pressing the agent answer (AAG) key. The Position ID is displayed on the supervisor's telephone. A supervisor can answer only one agent at a time. All subsequent callers hear a busy tone.

The supervisor can conference with the agent and the calling party in two ways.

— The agent can initiate a conference.

— The supervisor can force a conference as described in Observe Agent.

Supervisor Control of Night Service (NSVC) (Advanced)

This feature allows the supervisor to force the system into Night Mode, instead of waiting for all the agents to log out. However, it is recommended that each agent log out with the MSB key even when the supervisor initiates Night Service (NSVC). If the agents do not log out, and the supervisor deactivates Night Mode, the agents are placed in the available agents queue.

This feature allows three different configurations: transition mode, night mode, and day mode.

Transition mode This allows ACD agents to answer calls in queue, while new incoming calls receive Night Service (NSVC) treatment. To select this mode, press the NSVC key, and the letter T (number 8) on your dial pad.

Night mode This gives all existing calls in the queue NSVC treatment, as well as presenting NSVC treatment to new incoming calls. To select this mode, press the NSVC key, and the letter N (number 6) on your dial pad.

Day mode This returns the queue to normal operation. To select this mode, press the NSVC key, and the letter D (number 3) on your dial pad.

When the NSVC key is used, it must be deactivated to get out of Night Service. If the ACD agent positions are not logged in when the NSVC key is deactivated, the system remains in Night Service until an agent logs in. When not using the NSVC key, the system still goes into Night Mode when all agents log out.

Only one NSVC key can be-defined per ACD DN. The status of the NSVC key is not indicated on agent positions. The NSVC key is assigned to a key/lamp on the supervisor's telephone. The NSVC key/lamp displays the following conditions.

- **Dark** The NSVC key is deactivated. This does *not* mean the ACD DN is out of Night Service. An Agent must be logged in for the system to leave Night Service.

- **Fast Flash** The system is in Transition Mode. Night Service is activated for new calls coming in to the queue, but calls in the queue are handled normally. Once the queue is empty, the mode automatically changes to Night Service or Steadily Lit.

- **Steadily Lit** Night Service is in effect. All new calls coming into queue, and all calls remaining in the queue, now receive the Night Service treatment specified for that ACD DN.

To change the status of the NSVC key, the Supervisor can press the NSVC key and dial a special letter command, as shown in Figure 4. When the letter is dialed, the light state changes as the system starts NSVC treatment. The system ignores incorrect commands.

Figure 4
NSVC treatment commands

Press NSVC key and dial letter (#)	Light state before	Light state after	Mode entered
T (8)	dark	flashing	Transition
N (6)	dark or flashing	lit	Night
D (3)	lit	dark	Day

Feature interactions

Call **Overflow** When the system is in the Night Mode, no new incoming calls are allowed to Automatic or Time Overflow.

Call Park Recall If an ACD call has already Recalled back when the supervisor activates Transition Mode, the call is connected to the next available agent. If the call has already been recalled back when the supervisor activates the Night Mode, the call receives NSVC treatment. If an ACD call recalls back to an ACD DN in Night Mode, it receives the NSVC treatment defined for that ACD DN.

Call Transfer If a call is transferred to an ACD DN that is in the Transition or Night mode, the call is given NSVC treatment. If a call is transferred to an ACD DN, and is ringing that ACD DN on an agent telephone when the supervisor puts the system into Night mode, the transferred call continues to ring on the agent's telephone until it is answered or abandoned. If the call is in queue waiting for an agent when the supervisor puts the system into Night mode, the call receives Night treatment.

Calls Waiting Indication (AWC) When the supervisor activates the Transition mode, the AWC lamp indicates only those calls still waiting in the queue. It does not reflect incoming calls that receive NSVC treatment. In the Night mode, the AWC lamp is dark and all incoming calls receive NSVC treatment.

Display Waiting (DWC) When the supervisor activates the Transition Mode, the Display Waiting (DWC) lamp indicates only statistics for calls waiting in the queue. The Display Waiting Calls key on the supervisor's telephone shows a measure of calls waiting, including all calls that are in the queue, but not yet presented to an agent.

Interflow When the NSVC key is activated, incoming calls receive Night Service treatment and are not allowed to Interflow.

Time Overflow Calls remaining in the source high-priority and non-priority queues, when NSVC is in the Transition mode, may still Time Overflow. However, when in the Night mode, calls remaining in the source queues cannot Time Overflow to target ACD DNs.

Calls in the source Time Overflow (TOF) queue may be answered by agents of the target ACD DN. Target ACD DNs cannot answer other source TOF calls when in the Transition mode. If a call is in the target queue because it overflowed by count, it cannot recall to its source queue if the source queue is in the Night mode. Once a call has overflowed, it is not possible to Overflow again, The call is not overflowed to the target unless the target can handle it. If it cannot Overflow, the call never leaves the source queue.

Operating parameters

Night Service cannot be changed through attendant administration.

Only one Night Service key can be defined per ACD DN.

If the supervisor's NSVC key becomes disabled, the feature is disabled in LD11, or the key is removed while Night Service is active, another NSVC key must be defined on another supervisor's telephone to take the ACD DN out of Night Service.

Night Service does not require that all agents log out at the end of the day and log in again the next day. However, it is recommended that each agent log out with the MSB key even when the supervisor initiates Night Service (NSVC). If the agents do not log out, and the supervisor deactivates Night Mode, the agents are placed in the available agents queue. The supervisor should verify that all agents have logged out when activating the NSVC key.
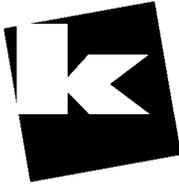
System features

This section lists both basic and advanced system features in alphabetical order. Each feature name is followed by (Basic) if the feature is part of ACD basic features (ACD-A, package 45), and (Advanced) if it is part of ACD advanced features (ACD-B, package 41). For a complete list of the features in each package, refer to "Document overview" on page 1.

ACD-CDR Connection Record (Basic)

The Connection Record option allows the customer to build and maintain a call profile that can be automatically transferred from one ACD agent to another.

Refer to *Call Detail Recording description and formats (553-263* 1- 100) for a detailed account of the Connection Record option.

Alternate Call Answer (Basic)

Alternate Call Answer (ACA) allows the customer to choose, on a per queue basis, whether ACD calls should be blocked for an agent set with an Individual Directory Number (IDN) call on hold.

When Alternate Call Answer is enabled, if an agent notices an ACD call waiting through the AWC key or the supervisor terminal while active on an IDN call, the agent can put the IDN call on hold and press the dark in-calls key to return to the idle agent queue. The in-calls key will stay in dark until an ACD call is presented.

When Alternate Call Answer is disabled and an agent is active on an IDN call, putting that call on hold and pressing the dark in-calls key does not return the agent to the idle agent queue. No ACD calls will be presented.

Be sure to evaluate operating procedures prior to enabling this feature. For example, ACA should not be used if an agent puts an IDN call on hold and walks away. ACD calls could be connected while the agent is gone.

Feature interactions

500/2500 ACD sets Alternate Call Answer does not support 500/2500 ACD sets.

Answer/call ACD supervisor Answer/call ACD supervisor is supported. The agent can press the supervisor (ASP) key to answer/call the ACD supervisor. If the agent:

- uses the supervisor key to talk to the ACD supervisor and

- an ACD call is waiting in the queue

then the Alternate Call Answer option allows the agent to press the

- hold key to put the supervisor call on hold

- dark in-calls key to be ready to answer an incoming ACD call

Call Transfer Call Transfer is supported. The Alternate Call Answer Option allows the agent to press the

- hold key to put the call on hold after the third party answers the call and before completing the transfer

- dark in-calls key to be ready to answer an incoming ACD call

Conference Both three-party and six-party conferences are supported. The Alternate Call Answer feature allows the agent to press the

- hold key to put the established call on the conference key on hold

- dark in-calls key to be ready to answer an ACD call

No Hold Conference is not supported.

Dial Intercom Dial Intercom (DIG) is supported. If the agent makes a call using the DIG key and an ACD call is waiting in the queue, the Alternate Call Answer option allows the agent to press the

— hold key to put the DIG call on hold,

— dark in-calls key to be ready to answer an incoming ACD call

Hot Line Hot Line (HOT) is supported. If the agent makes a call using the HOT key and an ACD call is waiting in the queue, the Alternate Call Answer option allows the agent to press the

— hold key to put the HOT call on hold,

dark in-calls key to be ready to answer an incoming ACD call

Multiple Call Ringing/Non-ringing Multiple Call Ringing/Non-ringing (MCR/MCN) is supported. If the agent makes a call using the MCR/MCN key and an ACD call is waiting in the queue, the Alternate Call Answer option allows the agent to press the

— hold key to put the MCR/MCN call on hold

— dark in-calls key to be ready to answer an incoming ACD call

Private Line Ringing/Non-ringing Private Line Ringing/Non-ringing (PVR/PVN) is supported. If the agent makes a call using the PVR/PVN key and an ACD call is waiting in the queue, the Alternate Call Answer option allows the agent to press the

— hold key to put the PVR/PVN call on hold

— dark in-calls key to be ready to answer an incoming ACD call

Ring Again Ring Again (RGA) is supported.

Single Call Ringing/Non-ringing Single Call Ringing/Non-ringing (SCR/SCN) is supported. If the agent makes a call using the SCR/SCN key and an ACD call is waiting in the queue, the Alternate Call Answer option allows the agent to

press the hold key to put the SCR/SCN call on hold

— dark in-calls key to be ready to answer an incoming ACD call

Voice Calling Voice Calling (VCC) is supported. If the agent makes a call using the VCC key and an ACD call is waiting in the queue, the Alternate Call Answer option allows the agent to press the

- hold key to put the VCC call on hold

- dark in-calls key to be ready to answer an incoming ACD call

Automatic Overflow (Advanced)

Automatic Overflow allows incoming ACD calls to be diverted from the call queue in which they would normally be placed (source queue) to another queue (target queue) during busy periods. Up to three target queues may be designated for each source queue. The target queue that meets the requirements for Overflow (the queue is not handling a volume of calls which exceeds a predefined busy threshold) is selected as the queue to which incoming calls are redirected. Overflow does not occur unless at least one of the Overflow queues meets these requirements. The situation is evaluated for each new incoming call.

Automatic Overflow only applies to new calls attempting to enter a queue; calls already in the queue are not transferred to a target queue. Priority calls that are overflowed to another queue retain their priority status in the target queue. The various treatments (RAN, MUSIC, etc.) specified for the source queue remain in effect for each call, even though it is placed in the target queue.

Three threshold levels must be established for each ACD DN involved in Automatic Overflow:

- CWTH = Calls Waiting Threshold

- BYTH = Busy Threshold

- OVTH = Overflow Threshold

The threshold levels are set for each ACD DN during installation and can be modified by service change or load management.

The first threshold (CWTH) is for lamp status only.

When the second threshold (BYTH) is met or exceeded, the queue is busy. This queue cannot accept any calls attempting to overflow from other queues.

When the third threshold (OVTH) is met or exceeded, the queue is in an Overflow state. The next new call into the queue attempts to overflow.

Note: For a complete discussion on lamp states, see the Agent Calls Waiting, or Display Waiting Calls, in this document.

The system checks the Overflow queues one at a time. The first queue operating below the BYTH is selected as the target queue. The call is then placed in the target queue and does not return to the source queue. Selection of a target queue is performed for each new call coming into the source queue. Thus, if a target queue meets or exceeds the BYTH, then another queue is checked as a target queue. If an available target queue is not found, the call is placed in its source queue.

Source and target queues must be within the same ACD customer, unless Network ACD (NACD) is allowed. NACD uses timed overflow rather than automatic overflow. *See Network ACD description and operation* (553-3671-120).

A physical telephone must exist and be in the Not Ready state for Automatic Overflow decision process illustrated in Figure 5'.

Figure 5
Automatic Overflow decision process

New call arrives
to source ACD DN

Call placed in the
source queue

Position occupied
Day mode

Overloaded   Source
ACD DN?   Not overloaded

Not occupied
Night mode

Overflow
ACD DN?

Night RAN
(optional)

Not
available

Available
and Not Busy

Night Forward
Treatment
specified   No

Yes   Night Forwarding
destination

Call placed in the
overflow queue

553.1301
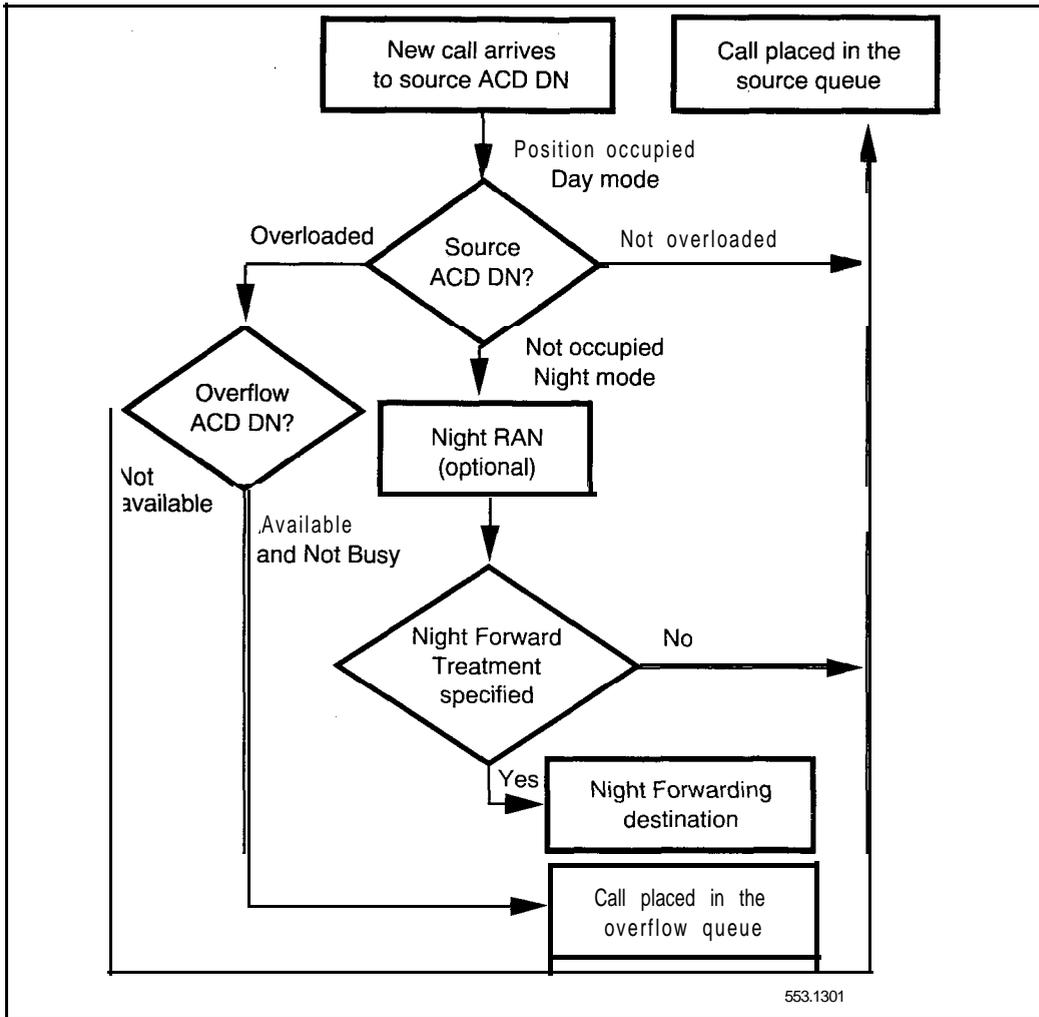
Call Forcing (Advanced)

Call Forcing is an alternative to standard manual answering. This feature automatically presents a call to an agent in an answered state. Consequently, if the Call Forcing option is enabled, the In Calls key is not pressed to answer the call.

An ACD call answered by Call Forcing can be completed in one of the following ways.

— If the caller releases and disconnect supervision is provided, the agent is returned to the agent queue automatically after a two-second delay.

— If post-call processing is not required, the agent presses the In-Calls key or release key to force a disconnect. The agent is returned automatically to the agent queue after a two-second delay.

— If post call processing is required, the Not Ready key is operated. When post-call work is finished, the In Calls or Not Ready key is pressed, and the agent is inserted immediately into the agent queue.

Prior to X11 release 16, there is a pre-determined two-second delay between when the agent releases from an ACD call and when the agent is available to receive the next ACD call.

XI 1 release 16 and later provides a delay, from 0 to 30 seconds, before presenting another call. When an agent disconnects from an ACD call, the agent has from 0 to 30 seconds until the next ACD call can be presented based on the delay time is set in the system software with the FCFT prompt in LD23. The default is 2 seconds. See the *X11 input/output guide* (553-3001-400).

Feature interactions

Priority Agent Flexible Call Forcing interacts with Priority Agents. If a call comes into a queue while the priority 1 agent is still in a delay state (the Flexible Call Forcing timer has not expired), the priority 2 agent receives the call. The priority 1 agent is not returned to the idle agent queue until the specified time is up.

Headset and handset Call Forcing can be used with agent telephones equipped with either a headset, a plug in handset, or a standard handset. When using either a headset or a plug in handset, Call Forcing operates as described. Unplugging the headset or handset activates Make Set Busy. When using a telephone with the standard handset and switchhook, Call Forcing works only when the handset remains off-hook.

Call Interflow (Advanced)

Call Interflow gives the ACD supervisor the ability to redirect excess traffic to another predesignated Interflow DN (IFDN). The Inter-flow (ENI) key supplements Automatic Overflow. When the Interflow (ENI) key is pressed, the Inter-flow action occurs only after the following events.

- the number of calls in the source queue equals or exceeds the Overflow threshold (OVTH)

- all target queues specified for Automatic Overflow are at or past their Busy Thresholds (BYTH), or are in Night service

- the ENI key has been pressed

The number of calls in the Time Overflow (TOF) queue is added to the number of calls in the high priority and non-priority queues to determine if the OVTH or BYTH has been exceeded.

If the Interflow DN (IFDN) is an internal ACD DN and the source DN has a TOF Timer (TOFT) defined, then the call may recall back to the source ACD DN. Refer to the sections on Overflow Configurations for details on call configurations when the IFDN is defined as an internal ACD DN.

Note: If a call routes to an Interflow ACD DN in Night Service, the call is rerouted back to the source queue. It does not forward to the Night Call Forward (NCFW) DN for the target queue.

Enhanced Interflow

Call Interflow is enhanced to provide Interflow mode automatically from source queues without using the Enable Interflow **(ENI)** key. This enhancement also monitors calls after evaluating the Interflow destination. If a busy condition is encountered, then there are two possible treatments. Only one of these treatments is presented to a call:

— Busy Tone Returned

— Link to the Source Queue

   Calls from high priority trunks are put in the high priority queue. All other calls are put in the non-priority queue. Once in a queue, calls are allowed to receive RAN, music and other options as defined for the source queue.

Enhanced Interflow operates in three steps. As long as the Intefflow DN (IFDN) for the source queue is another ACD DN, the system can send Interflow calls to another queue for a total of three ACD **DNs.** However, if all three **IFDNs** are in the Night mode or Interflow state, the call is placed in the source queue. See Figure 6.

Respond to the BUSY prompt in LD23 to treat the following call types.

   Internal
   Attendant
   CO/Trk
   DID/Tie Trk

Figure 8
IFDN Levels

New call arrives source ACD DN in Inter-flow state

IFDN defined or valid? — No → Place in source queue.

Yes

IFDN = ACD-DN? — No → Try to terminate on trunk, station, or attendant interflow DN. → Ringing?

Give Interflow treatment defined for source ACD DN.

No

Ringing? — Yes → Terminate as specified .

Yes

IFDN in interflow state or Night service? — No → Terminate on interflow DN.

Yes

Third level in Interflow state or Night servic — No → Terminate on Interflow DN.

Yes → Place in source queue.

553-1302

Busy, or Link to Source are defined for these four call types. CO/Trk calls always Link to Source because they cannot return answer supervision. Figure 7 defines the treatments, based on call type, for IFDN destinations available to incoming calls.

Figure 7
IFDN Treatment by Call Type when the IFDN is unavailable

IFDN	Call type (originating)			
	Telephone	**Attendant**	**CO trunk**	**DID/Tie trunk**
Telephone	Busy tone	Busy tone, link to Source queue	Link to source queue	Busy tone, link to source queue
Attendant	Busy tone	Link to source queue	Link to source queue	Busy tone, link to source queue
ACD DN	Busy tone, link to source queue	Busy tone, link to source queue	Link to source queue	Busy tone, link to source queue
Trunk ACOD	Busy tone	Busy tone, link to source queue	Link to source queue	Busy tone, link to source queue
NARS	Busy tone	Link to source queue	Link to source queue	Busy tone, link to source queue
Invalid DN	Link to source queue	Busy tone, link to source queue	Relink to source queue	Link to ACD source queue

Feature interactions

ACD Night Call Forward If the Night Call Forward (NCFW) number is another ACD DN in the Interflow state, the call is sent by Intefflow mode to the next level. If the call has already been sent to the third level, it waits until the NCFW DN queue is available. When room is available in the queue, the call is placed in the NCFW queue.

ANI route selection An Access Code for AN1 trunks can be set as an Interflow treatment destination.

Attendant extension The attendant can only extend calls to a queue in Interflow when the Interflow treatment is link to the source queue.

Attendant Overflow Position Calls that are given Intefflow or Night Call Forward treatment to an attendant can be answered.

Class of Service restrictions If the IFDN is trunk restricted from the call originator, the call is returned to the source queue instead of receiving an overflow or busy tone.

Do Not Disturb (DND) If the attendant has activated DND on the IFDN telephone, and its Hunt DNs are busy, the call receives Interflow treatment as if the IFDN were busy.

Invalid IFDN If the IFDN for the source queue is invalid, error code ERR4277 is output and the call is linked back into the source queue. For definitions of the error codes that are output, refer to *X11 input/output guide* (553-3001-400).

Network Ring Again (NRAG) If the Interflow treatment defined links calls back to the source queue, the NRAG call is *not* allowed to ring again.

Automatic Overflow A call that is subject to the Interflow treatment, but is returned to the source queue instead, cannot be treated with the Automatic Overflow treatment to a target ACD DN.

Ring Again (RGA) Internal calls treated with the Interflow treatment from an internal telephone are allowed to ring again to the IFDN. If the IFDN is an Attendant in Night Service, then the internal telephone can ring again to the IFDN.

TGAR restrictions If the IFDN is subject to TARG/TGAR restrictions, the call is linked to the source queue instead of receiving an overflow tone.

Time Overflow A call that has interflowed to another ACD queue can be returned to the source queue based on the source queue's Time Overflow Timer (TOFT). The call is eligible to be answered by an agent in the source queue, or the target queues specified as Overflow DNs (OVDN).

Trunk Group Busy If the IFDN is a Route Access Code and all trunks in the route are busy, calls transfer to the attendant. If the IFDN is a NARS/BARS access code, and any one route is Attendant Busied, calls transfer to the attendant.

DNIS DNIS information is passed to the Interflow destination.

Operating parameters

Busy trunk conditions apply only to internal trunks on the same switch as the source ACD DN.

The DNs for DISA calls are not supported by a Call Interflow treatment or its enhancements.

If the programmed IFDN is not an ACD DN, then calls that Interflow cannot transfer back to the source queue while it is in interflow state.

The DN for a Release Link Directory Number (RLDN) is not supported by a Call Interflow treatment, or its enhancements.

Customer Controlled Routing (CCR) (Advanced)

In addition to EAR basic functionality, Customer Controlled Routing (CCR) allows the customer to customize the treatment and routing of incoming calls. through a user-friendly interface. Calls arriving at a CDN in the controlled mode have their handling determined by a customer-defined script executed by the Customer Controlled Routing Module (CCRM) application, rather than being handled by the X11 software. Refer to the NTPs listed at the beginning of this document for further information.

Specifying the controlled option for a CDN allows the CCRM application to control the call treatment of calls arriving at the CDN. This controlled option is called the "controlled mode."

The CCR application module allows customers to write call scripts that specify call routing to one or more destinations within the Meridian 1 system. When a call arrives at a CDN in controlled mode, the X11 software informs the CCRM software of this event using communications over an Application Module Link (AML) dedicated to the CCR application.

CCR associates the call with a customer-defined call treatment script, based on the CDN where the call arrived. The X11 software receives instructions to direct the handling of the call based on the script commands. Customers decide how a call is handled based on a variety of parameters, such as CLID, DNIS, time of day, number of calls queued at the destination ACD DN or number of idle agents. In addition, CCR allows a call to queue simultaneously at up to four ACD DNs. You may also remove calls in queue to ACD DNs with the Remove From request.

CCR requires additional haidware and software packages. CCR requires an additional application processing module, the Customer Controlled Routing Module (CCRM), in addition to CCR (package 215), EAR (package 214), and Command and Status Link (package 77).

CCR features include all the functionality of EAR features plus the additional features covered in this section. Refer to the Enhanced ACD Routing section for the EAR advanced features.

CCR features allow calls arriving through CDNs in the controlled mode to be queued in four ACD DNs simultaneously. CCR calls in controlled mode are considered virtual calls, and are not counted as part of the number of calls in queue at an ACD DN in which they reside for features such as Overflow by Count and Intefflow. When equipped with CCR, a CDN possesses the following attributes:

- mode of operation (controlled or default)
- association with the Application Module Link (AML) handling CCR messages for this DN (VSID)
- association with TTYs assigned for status display
- CWTH, BYTH, and OVTH thresholds

The mode of operation of an individual CDN can be switched between controlled mode and default mode by changing the mode of operation attribute of the CDN. It can be changed by the following:

- LD 23
- load management

As calls arrive at a CDN, the operation mode of the CDN is checked to determine the treatment required for the call. If controlled mode is selected, the X11 software notifies the CCRM application. If the CCRM software accepts the call, it is controlled by the CCRM application. If the conditions for controlled treatment are not met, the call is given the default treatment.

The conditions for-meeting the controlled treatment requirements are:

— The CDN must be set to controlled mode.

— The AML must be defined and operational for communication with the CCRM application.

— The CCRM application must take control of the call within 4 to 6 seconds for most types of calls and 1.9 seconds for Japan DID trunk calls.

CCR controlled mode operation

In controlled mode operation, an arriving call is queued to the CDN until one of the following actions occur:

— the call is answered

— the call is abandoned (caller hangs up)

— the call is given busy or disconnect treatment from CCR

— a route request is performed

While it remains in the CDN queue, the only call processing applied to the call is that issued by the CCRM application through command messages.

CCR script commands and operation

Queue request

The Queue To request command allows a call to be virtually queued to an ACD DN while maintaining its position at other ACD DNs that received a Queue To request. A call can be queued to up to four ACD DNs simultaneously.

A priority is specified in the queue request, which determines the call's placement in the ACD DN queue. If a tone has not yet been given to the call, the call receives ringback until changed by the CCRM application.

All subsequent queue requests place the call in the specified ACD queues simultaneously, without changing the placement of the call queues where it already resides. If a second queue request is attempted for a queue that the call is already in, the call is repositioned in the ACD queue with respect to the new priority.

Call priority

Controlled mode CCR provides four levels (1 - 4) of call priority. The call priorities and their corresponding ACD priorities are:

- priority 1: high priority timed overflow call queue (highest)

- priority 2: non-priority timed overflow call queue

- priority 3: high priority call queue

- priority 4: non-priority call queue (lowest)

Queueing by priority

When the CCRM application issues a Queue Request, the call for which the queue request was made is placed at the end of the ACD priority call queue, corresponding to the requested priority.

By placing a call at the end of its priority, an *ordering by-time-in-priority* is maintained. Therefore, calls that have been waiting longer in a specific priority are never positioned behind calls just entering the priority.

Changing call priority

When the Xl 1 software receives a Queue Request for a call already queued at the specified ACD DN, and the priority in the request is different from the call's current priority assignment, the call is repositioned in the ACD queue at the end of its new priority.

If the priority is the same, the request is ignored and the call retains its current position and priority in the specified ACD queue. Changing a CCR call's priority in one ACD queue does not affect its priority (which can be different) in other ACD queues where it may also be placed. Once a call's priority has been changed, its time-in-priority is zero in the ACD queue for which its priority was changed. The call's time-in-priority in other ACD queues in which the call is waiting is not affected.

Order of present&ion of queued calls

Three different queue priority algorithms can be defined for an ACD queue to determine which call in that queue is selected for presentation to an available agent. The CCR calls are threaded into the existing queues based on the priority the CCR module assigns to it. Therefore, the existing call presentation algorithms apply to CCR calls as described below.

> *Note:* The following describes how the existing call presentation algorithms apply to ACD DNs, not CDNs.

Oldest call in network This option picks the oldest, highest priority call in the network. The first call in the TOF, Call Request and nodal source TOF queues must be compared. The call with the highest priority that has waited the longest is presented to the available agent. In LD23, OCN=Yes, and HPQ=NO.

Own TOF queue first This option picks the oldest, highest priority call within the ACD queue's own TOF queue. In LD23, OCN=NO and HPQ=NO.

Own TOF and high priority queues first This option picks calls from the queue's own TOF and high priority queues before any others. In LD23, OCN=NO and HPQ=Yes.

Determining queue length

Some ACD functions such as Overflow by Count and Interflow operate according to the number of calls in the ACD queues. Since the CCR calls are virtual calls, *they will not be counted* when determining the queue length for an ACD DN in:

- Overflow Threshold (OVTH), used by Overflow by Count and Interflow

- Busy Threshold (BYTH), used by Overflow by Count

- call waiting field on the ACD/Meridian MAX real-time displays

- ACD-C Ongoing Status Displays

- Call Waiting lamp updates if the new call waiting option (NCWL) is disabled

- number of calls currently waiting in queue field (aaa) of the DWC display

CCR calls are counted for:

- a part of the total number of queued calls for CCR call scripts

- the waiting time of the oldest call in the queue field (ccc) of the DWC display

- Call Waiting lamp updates if the new call waiting option (NCWL) is enabled

- the virtual calls that can be answered field (dddd) of the DWC display

- the age of oldest call intrinsic within CCR call scripts

- the number of calls to be answered when an ACD DN enters the transition mode of Night Service

- in the new ACD-D option, messages that include the number of CCR calls for real-time displays

Remove From Request

The Remove From Request allows the CCRM application to remove a call from a queue where it was previously queued. The removal does not affect the placement of the call in other ACD queues.

A call cannot be removed from a CDN queue. A call can only be removed from ACD DNs where a Queue Request was previously issued.

Give RAN Request

With a Give RAN Request, the CCRM application can request that a certain call be given RAN treatment from the RAN route indicated within the Give RAN request. When a RAN Request is received, the call is given the RAN of a specified route (if trunks are available), or placed in the RAN queue corresponding to that route.

The RAN route parameters defined on the Meridian 1 determine the type of RAN provided. If different RANs are desired for a call, they must be defined in different routes.

The X11 software cannot connect the call to a route that is not marked for RAN by service change. If RAN is given to a call, the next call script command is not executed until the RAN message is finished.

If a call is presented to an agent while receiving RAN, RAN is interrupted, ringback is given to the caller, and CCRM is notified of the RAN completion. If the agent returns the call to the queue at the time of presentation by pressing the Not Ready or Make Set Busy keys, the caller is given ringback. Since the call was not answered, the CCRM application continues to control the call and issue call control commands for the call.

An attendant is not allowed to receive RAN treatment.

If the first command of a call script is *Give-RAN,* ringback is provided with connection to RAN. Because of this, the RAN route is no longer required to have answer supervision enabled for an ISDN call to first receive RAN.

Music Request

The Music Request provides music to the caller. The route specified must be marked as a music route for the command to succeed. Music is persistent; it is given between other call treatments once given to the call. For example, a controlled call receiving Music because of a previous request is given RAN by a RAN request. After completing the RAN, music resumes.

An attendant is not allowed to receive music treatment.

Tone Request

This request provides the caller with a tone option. Currently, silence and ringback are the only supported tones. The tone specified in this command is provided to the caller until it is interrupted (replaced by a RAN or Music request when the call is presented, forced or routed elsewhere, or the tone is changed by another tone request).

The treatment (such as music) interrupting the tone determines whether a tone resumes after completing an interrupting treatment.

Tone transition before and after call event

A ringback tone provided to a call because of a call presentation does not change the previous tone flag. For example, a controlled CCR call receives music before it is connected to an agent. This call receives a ringback tone before the agent answers it. However, if the agent presses the NRDY key to return the call to the queue. the call still receives the ringback tone. If the CCRM application now issues the Give RAN command to this call, after getting RAN the call will receive music instead of the ringback tone.

The following table shows how different call actions affect the tone given to the call before and after the action.

Table 2
Tone transitions (Part 1 of 2)

Action	Tone before action	Tone after action
Queue to	No tone	Ringback
Queue to	Silence	Silence
Queue to	Ringback	Ringback
Queue to	Music	Music
Dequeue	No tone	Ringback
Dequeue	Silence	Silence
Dequeue	Ringback	Ringback
Dequeue	Music	Music
Give RAN	No tone	Silence
Give RAN	Silence	Silence
Give RAN	Ringback	Silence
Give RAN	Music	Music
Give tone (silence)	No tone	Silence
Give tone (silence)	Ringback	Silence
Give tone (silence)	Music	Silence
Give tone (ringback)	No tone	Ringback
Give tone (ringback)	Silence	Ringback
Give tone (ringback)	Music	Ringback
Give music	No tone	Music
Give music	Silence	Music

Table 2
Tone transitions (Part 2 of 2)

Action	Tone before action	Tone after action
Give music	Ringback	Music
Force disconnect	No tone	(call is gone)
Force busy	Whatever tone	busy (call is gone)
Route to	Whatever tone	(call is gone)

Note 1: If Give Tone, Give Silence, or Give Ringback command is issued during the action, then the tone given to the call after the action is changed to the tone requested by the Give command.

Note 2: The ringback tone given to the call because a call presentation does not change the previous tone flag.

Force Request

Force Request changes the call state to the one indicated by the request. The supported options are disconnect and busy. This command removes the call from all queues where it resides and gives it the requested treatment. For the disconnect command, trunk calls are answered (if they are not already answered) and then disconnected.

For the busy command, unanswered CO/FX/WATS trunk calls receive default treatment. Unanswered ISDN CO/FX/WATS trunks are allowed to receive busy tone. Other trunk types can be given busy tone if previously unanswered (no toll).

When Forced Request is used, it should be the first command given in a script. If it is not, a caller may hear ringing before getting a busy tone or being disconnected.

Route Request

Route Request diverts the call to a specific DN as if the call had been dialed directly. The call is removed from the CDN and any other ACD queues, then routed to the specified target DN.

Listed below are the DN types supported:

— Set DNs: any number which terminates on a user telephone

— Trunk DNs: any number which accesses a trunk (such as trunk access codes)

— Attendant DNs: any number which terminates to an attendant console

— ESN DNs: any number (such as CDP, UDP numbers) which accesses the Enhanced Switching Network

— ACD DNs and CDNs: all CDNs and ACD DNs in the customer's system. However, the Route To DN cannot be the CDN that originated the call. If it is, an overflow tone is returned.

Call abandoned

When a call is abandoned while in the controlled mode of operation, the call is removed from all queues in which it resides, then an abandoned message is sent to the CCRM application.

Call presentation

When a controlled call is presented to an ACD agent, the call is removed from all other ACD queues in which it has been placed. If the caller was receiving RAN or a tone, the caller now hears ringback.

If the agent returns the call to the queue, it is returned to all ACD queues in which it was placed before the presentation. A call can be returned to queue only if there are no other idle agents for that queue.

When a controlled CCR call is returned to the queue(s), it is placed at the head of priority 1 (timed overflow high-call queue) of the ACD queue. This assures that the next available agent receives the call. If this call was also placed in other ACD queues by queue commands from the CCRM application, it is replaced in each of its other ACD queues at the top of the priority at which the call was previously queued. With X11 release 18 and later, the call is replaced in the queue in the same position it held before.

The caller hears ringback when the call is placed back in its queue.

Call answered
When a call is answered during controlled mode, the X11 software notifies the CCRM application. The CCRM no longer controls the call.

CCR call handling error detection

Synchronization errors Four synchronization errors that affect the CDN can occur on a per-call basis. These four errors are:

— No script is available. Call receives default treatment. Ceiling value is checked. CDN is changed in protected memory to default mode and a CCR003 message is output on the maintenance TTY.

— An undefined CDN call. Call receives default treatment. Ceiling value is checked. CDN is changed in protected memory to default mode and a CCR003 message is output on the maintenance TTY.

— An invalid call ID is received. Call receives default treatment. Ceiling value is checked.

— CCR cannot control the call. Call receives default treatment. Ceiling value is checked.

Switching from the controlled to the default mode of operation The X11 software reverts the calls controlled by the CCRM software to default mode under abnormal conditions such as the link going down. However, if the calls are initially in the default mode, abnormal conditions do not occur.

During abnormal operation, calls already placed in one or more ACD queues remain in these queues until answered or abandoned. A call queued to one or more ACD DNs does not go to the default ACD DN, but stays in its queue and receives no further treatment (based on either the CDN parameters or the destination ACD DN parameters). When a CDN reverts to default, calls that are not queued to ACD DNs are sent to the default ACD DN (regardless of the ceiling level for the CDN) and receive EAR treatment.

When a call in the controlled mode must be redirected back to Meridian 1 call processing, the following rules apply:

- If a call is queued to an ACD DN because of the previous execution of a Queue Request, the call remains in the queues where it resides.

- If the call is not queued to any ACD DNs, the call is given the default treatment of the CDN in which it resides. Thus, it is queued at the default ACD DN of the CDN and thereafter governed by the rules regarding the default operation.

- The call ceiling value is not checked when diverting these calls to the default ACD DN. However, they are included in the call ceiling count when a new call is diverted to default mode.

The overflow threshold of the Default ACD DN applies to the diverted CCR calls coming into the queue.

The call reverts to default under these circumstances:

- Disabling of the AML in LD48 or LD96. X11 waits to receive a Start Up message from the CCRM application before returning to controlled mode.

- Polling message time out. X11 waits to receive a Start Up message from the CCRM application before returning to controlled mode.

- Ten successive time-outs on CCR messages. A **CCR001** message prints on the maintenance TTY. X11 waits to receive a Restart or Start Up message from the CCRM application before returning to controlled mode. When the Restart message is received, a CCR002 prints out on the maintenance TTY.

- Start Up received from the CCRM application. X11 waits for all calls in all CDN queues to revert to default mode as outlined above.

- Shut Down received from the CCRM application. X11 waits for the CCRM application to send a Start Up message before returning to controlled mode.

- *CCR Died* received from the CCRM application. X11 waits for the CCRM application to send a start message before returning to controlled mode.

- CCR003 means a CDN forced into default because there was no association in the CCRM.

Trunk unit fault If a trunk providing RAN to a CCR-controlled call goes down, the CCRM application receives a treatment-complete message so that the call may continue its treatment as prescribed by the call script.

Operating parameters

Prompts and responses The following prompts are added to LD23 equipped with the CCR package:

- CNTL (Yes, No): is the CDN in controlled mode?

- VSID: VAS ID for Application Module Link for CCR.

- HSID: VAS ID for Application Module Link for host.

- CWTH: Call waiting LED threshold.

- BYTH: Busy queue threshold.

  OVTH: Overflow queue threshold.

- STIO: TTYs assigned for status displays.

- TSFT: Telephone Service Factor Threshold.

CNTL prompt This prompt is given only if the system has the CCR package installed. The CNTL prompt determines whether or not the CDN is in controlled mode. When set to YES, the CDN operates in controlled operation. When set to NO, the CDN is restricted to using the default mode.

CCR capacity impacts

The following list describes the CCR impact on capacity:

- Real time- if 100 or more CDNs are defined, then the on-going status display could be affected. Therefore, a single script should be defined and used whenever possible for many DNIS numbers. For example, rather than defining a CDN for each DNIS number, define a single CDN and call script using IF statements within the script to provide different treatments based on DNIS numbers.

- Memory-each CDN takes up as much memory as an ACD DN.

- 240 ACD DNs/CDNs can be defined per customer.

- Call registers needed for CCR should be added to existing NCR in LD17.

- LD17 - CSQI and CSQO should be increased by 25%.

- LD17 • CSQI + CSQO = 255 each.

- Number of ACD trunks to CDNs minus the number of logged-in agents equals the number of unanswered calls times 7.

Feature interactions

ACD Ring again This feature is not allowed to operate on CDN queues. However, once the call is queued at an ACD DN by default treatment or a route request, this feature is available if configured.

Agent Display When a CCR call (either controlled or default) is either presented to or answered by the agent, depending on the agent's display class of service, the agent's display shows the following:

- Originator Information
- DNIS number (where applicable)
- Original Called Information

The Original Called Information category covers the CDN. The display of the CDN conforms to current X11 software operation, Therefore, if a call initially dials a CDN, the original called number (the CDN) is displayed when that call is presented to or answered by an agent, depending on the agent's display class of service.

The name of the CDN is displayed instead of the originator's or DNIS name if the following conditions are met:

- a name is defined for the CDN
- the agent's telephone has the *Calling Party Name Display Allowed* class of service
- the DNAM option is not enabled in the incoming route block

The redirecting number is the number of the last redirection. It changes as redirections occur within the network.

Under the best circumstances, the original called number and name are displayed on the terminating telephone. However, the redirecting number and name are used if a non-ISDN trunk or a switch that does not support the original called number message is encountered. A CDN can be a redirecting number and name.

Agent/Supervisor keys If a CCR call is presented to an agent and the agent activates an agent/supervisor key, call handling occurs as described in the Not Ready Key section.

Alternate Answering Service A CDN is not allowed to be an AAA DN.

APL Messages If an AUX Processor is equipped, APL messages are sent across the APL link when an EAR or CCR call is given to an ACD agent through the default treatment or the Queue To command requested by CCR.

Attendant Extension Attendant extension to a CDN is supported when the CDN is in controlled or default mode.

An attendant initiating a call extension to a CDN in default is diverted to the default ACD DN. If the attendant completes the extension when the call is in the ACD queue, the call maintains its place in the queue.

An attendant initiating a call extension to a CDN in controlled mode has an incoming message sent for it to the CCRM application module with the attendant as the originator. When the attendant completes the call extension by activating the release key, the call must be removed from all the ACD queues it is currently queued to and a call abandoned message must be sent to the CCRM application module. A new incoming message is sent for the extended call with the new originator information. The extension cannot be completed until the destination lamp on the attendant console is lit/wink.

Before the extension is complete, if the CCRM application sends Meridian 1 a treatment request for RAN, the attendant is not allowed to receive RAN. An attendant is not allowed to receive Music treatment in both ACD and CCR operations. The CCRM application determines what treatments are given to calls.

If the attendant extension is completed while the call is ringing on an agent's telephone, a call abandoned message is not sent to the CCRM application because the call should be answered momentarily. If the agent activates NRDY instead of answering the call, the call is handled as described in the Not Ready Key section.

If the attendant extension is completed after the call is answered, no interaction occurs because once the call is answered the CCRM application no longer controls the call.

Both ACD-C and ACD-D reports peg attendant extended calls as one call to the CDN.

Attendant Overflow Position A CDN is not allowed to be an attendant overflow DN.

Attendant Recall Once a call is extended by the attendant to a CDN, it cannot recall back to the attendant console.

Automatic Number Identification (in-band ANI) ANI information, if available, is provided to the CCRM application to use in call scripts.

Auto-terminate trunks Auto-terminate trunks may terminate to a CDN (auto-termination number). If the trunk is designed as a DNIS trunk, the DNIS digits are delivered to the CDN and are carried with the call to ACD queues where it ends up by either default or controlled mode.

AUTOVON Precedence Call A call from a precedence trunk is not allowed to wait in the ACD queue. If there are no idle agents, the call is either intercepted to the attendant or given PICP treatment if the Station Loop Preemption package is enabled.

Precedence calls to CDNs in default mode are also intercepted to the attendant or given LPICP treatment if the call must wait in an ACD queue. No checking of precedence calls occurs for CDNs that are in the controlled mode because when the call comes in, Meridian 1 does not know to which ACD DNs the CCRM application will queue the call.

Barge-In The attendant is prevented from barging into the originating trunk of a controlled or default CCR call.

Busy Verify The attendant is prevented from busy verifying the originating telephone of a controlled or default CCR call.

Call Forward A CDN cannot be defined as an FDN. If a user has defined a CFW key on the telephone and attempts to program the telephone to Call Forward All Calls to a CDN, the overflow tone sounds.

If the CCRM application issues a Route To command to a telephone that is the call is forwarded to the appropriate destination. Or if the telephone has the First Level Call Forward No Answer enabled, the CFNA DN for the Route To DN is obtained when the CFNA time-out occurs instead of the CFNA DN for the dialed DN (which is the CDN in our case), and the CCR call is forwarded to the next telephone.

Calling Line ID (CLID) CLID information is provided for use in call scripts. It is also available for telephone displays and other applications to which the CDN can'pass the call by route requests and default DNs.

Calling Party Name Display (CPND) The CDN can be assigned a name with the CPND feature. The CCRM application can also assign a name to the same DN by the variables feature. These two names are not coordinated and can be different. The name is also available for telephone displays and for other applications to which the CDN can pass the call by route requests and default DNs.

Only M2317 and M2008, M2x16 and M2616 telephones are allowed to have CPND class of service. Name information can be displayed only on these types of telephones.

Call Park Recall If a controlled or default CCR call is answered by an agent who subsequently parks it, the call recalls back to the ACD DN of the agent and not the CDN.

Call Transfer The CCRM application must be informed of the call transfer because the originating information (such as CLID and DNIS number of the transferring party) could differ from that of the transferred party.

Scripts created on the CCRM application can have conditional branching based on the originating information. Thus, when a transfer is completed while the call is in the CDN queue, it is taken out of all the ACD queues to which it was queued.

If the agent activates NRDY instead of answering the call, the call is placed to the front of the queue so it becomes the next in line to be answered.

If the transfer is completed after the call is answered, no interaction occurs because once the call is answered, the CCRM application no longer handles the call.

The transfer of a call to a controlled CDN cannot be completed until a valid tone or treatment request for the transferring party is received from the CCRM application, and successfully performed by the Meridian 1 (tone can be ringback or silence and the treatment can be Queue To, Route To or give music or RAN). Both ACD-C and ACD-MAX (X11 release 4) reports peg transferred calls as one call to the CDN.

Additional Call Transfers are possible involving network call redirection. If *Telephone A* at *Node A* calls *Telephone B* at *Node B,* and *Telephone B* activates the transfer key, initiating a transfer to a CDN at *Node C,* when *Telephone B* completes the transfer, *Telephone A's* display is updated according to the mode of the CDN at *Node* C. If the CDN is in default mode, *Telephone A* gets the default ACD DN on his/her display, if *Telephone A* is placed in the default ACD DN queue, otherwise the display is updated with the number of wherever the default ACD DN diverts the call.

If the CDN is in controlled mode, *Telephone A* gets the CDN on the display. The CCRM application is unaware of the transfer for this event since the Meridian 1 does not send the messages when the transfer is complete at Node B.

Call Waiting Indication (AWC) If the New Call Waiting (NCWL) option is disabled, the number of calls queued to the ACD DN shown by the ACD calls waiting lamp (AWC) does not include controlled CCR calls.

If the New Call Waiting option is enabled, the number of calls queued to the ACD DN shown by the ACD calls waiting lamp (AWC) includes CCR calls.

Once a default CCR call has been placed in the default ACD DN, it is considered a regular ACD call (except that the call gets its RAN and music treatment from its source CDN). Default CCR calls are reflected in the AWC display as regular (non-virtual) CCR calls. Refer to the Night Mode section for a description of AWC when an ACD queue enters Transition or Night Mode.

Centralized Attendant Service An attendant at the main site can extend a call to a CDN at a remote location. The extension cannot be completed until the destination lamp is lit/wink.

CO trunks When a call enters the system by a CO trunk (including FEX and WATS), the Central Office provides ringback. This is maintained until default or controlled treatment actions change this. Calls arriving on other trunk types receive silence until treatment for the call is decided (default treatment calls receive ringback or other tones as for a call directly dialing into the ACD DN, while treatments given to controlled mode calls are controlled by the CCRM application). Answer supervision must be returned on a CO trunk before the following treatments can be given:

- music
- silence
- R A N
- Force Disconnect
- Force Busy

Customer Night Number A CDN cannot be defined as a customer night number.

Display Waiting Calls (DWC) key The light state of the Display Waiting Calls (DWC) key corresponds to the light state of the Calls Waiting (AWC) key. When the Display Waiting Calls (DWC) key is used at the supervisor's or agent's telephone, the display on the telephone is in the following format:

    aaa--bbb--ccc--dddd

Legend:

a a a	= number of calls in queue (TOF+high and nonpriority)
b b b	= number of agent positions manned
c c c	= waiting time for the oldest call in queue
d d d d	= virtual calls which include source TOF, call request queue, and CCR-controlled calls

Distinctive ringing Ringing is provided to calls originating from a route marked for distinctive ringing that has called or is diverted to a CDN in either controlled or default mode.

DN Expansion Five to seven digit directory numbers are supported for CDNs.

Dialed Number Identification Service (DNIS) This feature allows the software to store the last three or four dialed digits of a call arriving on DID or Tie trunks from the external network. This allows customers to identify the purpose of the call when a trunk terminates more than one number on the switch.

The ACD DN to which the call is directed is obtained from the auto-terminate field in the protected trunk block or can be obtained through IDC translation tables.

Calls arriving at an ACD DN by a CDN have the same DNIS information as if they had entered the ACD queue directly.

Enable Interflow (ENI) key A CDN cannot have an ENI key defined for it.

Enhanced Interflow Controlled CCR calls are not allowed to interflow. They are not included in the Overflow Threshold (OVTH) count.

Feature Group D (FGD) This feature provides ANI information (both calling and called party numbers) by FGD trunks. The calling party number (CLID) and the called party number (DNIS) is provided to the CCRM application for use in call scripts.

Feature Invocation Messages This feature allows applications to invoke telephone features on behalf of individual telephones. Because this feature creates new ISDN/AP messages, changes to TFS008, Traffic Measurement, must be made to monitor these new messages. For more information, refer to *Traffic measurement formats and output* (553-2001-450).

Hunting Only 500 and CDS, attendant, LDNs, or ACD DNs defined as message centers can be defined as a FDN or Hunt DN. A CDN cannot be defined as a FDN or Hunt DN. If a Route To command to a telephone is issued from the CCRM application, the call will hunt based on the parameters of that telephone.

Incoming Digit Conversion (IDC) CDNs can be entered as a valid termination in the IDC tables. A call can be rerouted to a CDN based on entries in the IDC tables.

Incremental Software Management (ISM) CDNs are counted as ACD DNs. For example, the limit specified by the ISM feature for ACD DNs applies to the sum of CDNs and real and virtual ACD DNs.

Individual DN (IDN) keys An IDN key can be any DN key, such as SCR, MCR, SCN and PLR. If an IDN key is activated while a CCR call is presented to the agent, call handling occurs as described in the Not Ready Key section.

ISDN/AP Enhancements This feature enhances existing messages and adds new ISDN/AP messages as part of the ISDN/AP enhancement.

ISDN Signaling trunks (ISL) If an incoming call to a CDN in controlled mode is from an ISL trunk in which the D-channel is active, then the required ISDN signaling messages are sent to the far end when the first treatment request is received from the CCRM application. However, if the D-channel goes down, ISDN messages are not sent when the first treatment request is received from the CCRM application.

Last Number Redial In the EAR feature, the stored number that can be redialed is the default ACD DN to which the call is routed by the default treatment instead of the normal dialed DN (which is the CDN in this case).

Make Set Busy If a CCR call is presented to an agent and the agent activates the MSB queue, call handling occurs as it is described in the Not Ready Key section.

Meridian Mail CCR controlled calls can be placed in a Meridian Mail queue by a Queue To command. The call is removed from all other queues where it resides when it is presented to a Meridian Mail port.

For a route request, CCR relinquishes control of the call when the route request is issued and before it is answered.

Multi-tenant For controlled mode, tenant numbers are not checked when the CCRM application module requests Meridian 1 to queue a call to a particular ACD DN. If the originator of a controlled CCR call is queued to an ACD DN and has a tenant number which has denied access to that ACD DN's agents' tenant, the agent is unable to answer the call after connecting the CCR call to an agent.

One guideline of the multi-tenant feature is for every ACD agent of an ACD DN to have the same tenant number. It is recommended that the tenant to which the caller belongs have access to the tenants in which ACD DN queues reside. The ACD DN queues are the queues to which the call may be queued by the Queue To command or default treatment. The system checks the access by looking at the first agent in the agent list. If this agent's tenant number is denied access to the originator of the call, the call receives intercept treatment and is denied access to this ACD DN.

For default mode, when a CCR call first enters the default ACD queue, it receives intercept treatment if the tenant number of the first agent of the default ACD DN is denied access to the originator of the call.

No multi-tenant checking occurs when a call enters a CDN queue because a CDN does not have agents against which it can check tenant numbers.

Network ACD (NACD) NACD target tables are not provided for CDNs, nor are CDNs allowed as targets for NACD Routing Tables of other ACD DNs. If a remote CDN is specified as a target in an ACD DN routing table, the remote node refuses the request and an error message is issued indicating an invalid DN. Controlled CCR calls can be sent to queue with NACD tables using the Route To command.

CCR calls in default mode are allowed to access the NACD routing tables of the destination ACD queue where they reside, while controlled mode calls are not subject to NACD rerouting.

The name of the CDN is sent to the target node if the CDN is the original dialed number. It appears as the original called number.

Network Call Forward No Answer This allows a person to define a trunk access code or NARS/BARS for a FDN. When the call rings at the remote FDN, the originator's display is updated with the redirection number (and name if defined).

CDNs may be entered as remote FDNs since there is no cross checking with the terminating node to verify the number entered.

If a CDN in default mode is entered as a remote FDN, the originating telephone is updated with the default ACD DN if the call is put into the default ACD DN queue, or with the number where the default ACD DN diverts the call if the call does not remain in the default ACD DN queue.

If a CDN in controlled mode is entered as a remote FDN, the CDN number is updated on the originator's display as soon as ringback is provided to the caller (ringback is provided to the caller when the CCRM application sends as a first command a Queue Request, a RAN request, or a Route To request). Ringback is provided when a Give Ringback Tone request is received (ringback is given regardless of whether the Give Ringback Tone was the first command received for the call).

Network Call Redirection This allows a person to define a trunk access code or NARS/BARS for a HUNT DN. When the call is ringing at the remote HUNT DN, the originator's display is updated with the redirection number (and name if defined).

Since the terminating node does not cross check to verify the number entered, CDNs can be entered as remote HUNT DNs.

If a CDN in default mode is entered as a remote HUNT DN, the originating telephone is updated with the default ACD DN if the call is put into the default ACD DN queue, or the number of wherever the default ACD DN diverts the call if the call does not remain in the default ACD DN queue.

If a CDN in controlled mode is entered as a remote HUNT DN, the CDN number is updated on the originator's display as soon as ringback is provided to the caller (ringback is provided to the caller when the CCRM application sends as a first command a Queue Request, a RAN request, or a Route To request). Ringback is also provided when a Give Ringback Tone request is received (ringback is given regardless of whether the Give Ringback Tone was the first command received for the call).

This feature also provides terminating number display information for transfer and call pick-up redirections. For example, if *Telephone A* at *Node A* calls *Telephone B* at *Node B,* and *Telephone B* transfers *Telephone A* to a CDN at *Node* C, after completing the transfer, *Telephone A's* display shows:

— the CDN's default ACD DN, if the call is put into the default ACD DN queue

— the number where the default ACD DN diverts the call, if the call does not remain in the default ACD DN queue

— the CDN (if the CDN is controlled)

Network CPND Network CPND includes a new prompt, RCAP, in the configuration per D-Channel to indicate whether to send the name:

— when the call is answered (ND1)

— when the call is presented (ND2)

ND1 — If ND1 option is enabled, the originator's telephone is updated with the name at the time that the call is connected. Therefore, if a CDN in default mode is dialed, the originator's telephone is updated with the name of the ACD DN of the agent that answered the call. However, if RAN is given before the call is answered, the originator's display is updated with the name of the ACD DN whose queue the call is in.

If a CDN in controlled mode is dialed, the originator's telephone is updated with the name of the ACD DN of the agent answering the call. However, if RAN or music is given, the originator's display is updated with the name of the CDN when the RAN or music is connected.

ND2 — If the ND2 option is enabled, the originator's telephone is updated with the name when the call is presented. Therefore, if a CDN in default mode is dialed, the originator's display shows the name of the default ACD DN or the name of the ACD DN to which the default ACD DN diverted the call using NCFW, overflow by count, or interflow.

If a CDN in controlled mode is dialed, the name of the CDN appears when the call is given **ringback** (ringback is provided to the caller when the CCRM application sends as a first command a Queue Request, a RAN request, or a Route To request. **Ringback** is also provided when a Give **Ringback** Tone request is received [ringback is given regardless of whether the Give **Ringback** Tone was the first command received for the call]).

If a Give RAN or Give Music command is issued before a Give **Ringback** or a Queue To command, the name of the CDN appears on the originator's telephone at the time the call is connected to the RAN or music. When the call is answered, the name of the ACD DN of the agent answering the call is not updated on the originator's telephone.

Network Call Trace A call within the ISDN network that is calling a CDN may have network call trace performed on it. The Network Call Trace (NCT) information collected for a default or controlled CCR call is discussed in different scenarios:

- *Telephone A* dials a CDN in controlled mode. The NCT output shows ORIG node and TBD node information with STAT of DIAL. The rest of the output depends on what treatments the call receives.

- *Telephone A* dials a CDN in default mode and the call is presented to an ACD agent immediately. The NCT output shows ORIG node and TERM node information with STAT of RING.

- *Telephone A* dials a CDN in default mode and the call is waiting in the default ACD DN. The NCT output shows ORIG node and TBD node information with STAT of ACD.

- *Telephone A* dials a CDN in controlled mode, CCR response time out, the call is then routed to the default ACD DN and presented to an ACD agent immediately. The NCT output shows ORIG node and TBD node information with STAT of DIAL.

- *Telephone A* dials a CDN in controlled mode, CCR response time out, the call is then sent to the default ACD DN and queued. The NCT output shows ORIG node and TBD node information with STAT of DIAL.

Network Call Transfer Network Call Transfer is supported for a CDN. If a caller on *Switch A* calls a telephone at *Switch B* and the telephone at *Switch B* initiates a transfer to a CDN at Switch *A,* when the transfer is completed the trunks between *Switch A* and *Switch B* are shut down.

Night Call Forward Calls controlled by the CCRM application are not allowed to Night Call Forward.

Night Key Digit Manipulation This feature allows an IDC route to have two routes defined-one for day and one for night. It also allows a new key (DRC) to toggle between the two routes on a per-route basis.

Since a CDN can be defined as a termination in an IDC table, then a call from an IDC trunk can terminate to a CDN both through the day and night tables.

Night Service (NSVC) key CCR calls in controlled mode cannot be placed by the Queue Request in ACD queues that are in Night Service or Transition Mode. In addition, calls already residing in an ACD queue when the queue goes into Night Service (Night Mode) are removed from that queue. The CCRM application is not notified when calls are removed from a queue due to the ACD queue entering Night Service.

When the default ACD DN of a CDN is in Night Service, all CCR calls entering the ACD queue by default treatment receive the Night Service treatment of the default ACD DN (Night RAN and Night Call Forward).

CDNs are valid destination DNs for the Night Call Forward DN of an ACD DN. A Night Service (NSVC) key cannot be defined for a CDN.

CCR calls do not queue to ACD DNs in Night Service.

Transition Mode — NSVC key If a queue goes into transition mode by the Night Service key, calls already in the queue remain, but no new calls are allowed to enter the queue. An ACD queue remains in transition mode until all of the calls which were in queue when transition mode was entered, including CCR calls that were placed in the queue by the Queue To command from the CCRM application, have been depleted. When no more calls remain to be answered, the queue enters Night Mode.

If a queue that was in transition mode enters Night Mode before all calls that were eligible to be answered were answered (for example, the supervisor manually takes the queue from transition mode to Night Mode by the Night Service key), call processing proceeds as described in Night Service.

Calls Waiting Indication (AWC) key If the New Call Waiting (NCWL) option is disabled for a queue, the number of CCR calls in that queue is not reflected by the AWC key lamps (the agents have no way of knowing if there are CCR calls in queue).

When a queue enters transition mode, agents do not have a true indication of the number of calls remaining to be answered since CCR calls are not included in the count when the NCWL option is not enabled. Therefore, the New Call Waiting option should be enabled for an ACD DN that will receive controlled CCR calls.

If the New Call Waiting option is enabled for a queue, the number of calls that remain to be answered are reflected by the AWC key lamp when the queue enters transition mode. CCR calls are included when the New Call Waiting function is determining the number of calls remaining in queue.

Display Waiting Calls *(DWC)* key When the ACD DN enters transition mode, the DWC display shows the following information:

- aaa = number of calls waiting in queue

- bbb = number of agent positions available

- ccc = waiting time for the oldest call in the queue

- dddd = the sum of CCR calls.

Night Mode by the NSVC Key When an ACD queue enters Night Mode by the Night Service key, the CCR calls are treated the same as described in Night Service.

Calls Waiting Indication (A WC) key When the ACD queue enters Night Mode, the AWC key lamp goes dark, indicating that no calls are eligible to be answered since the queue is in Night Service.

Display Waiting Calls (DWC) key When the ACD queue enters Night Mode, all of the fields in the display are zero since calls are not eligible to be answered and the agents are unavailable: the queue is in Night Service.

Night RAN A default CCR call receives the night RAN as it is defined for the ACD DN in which it is currently queued.

Night Call Forward Controlled calls are not allowed to Night Call Forward. Default CCR calls are allowed to Night Call Forward.

Not Ready (NRDY) Key If a CCR call in default mode is presented to an agent and the agent activates the NRDY key, call handling occurs according to current Meridian 1 software operation.

If a CCR call in controlled mode is presented to an agent and the agent activates the NRDY key, the software presents the call to another idle agent.

If there are no idle agents, the call is placed at the head of priority 1 (timed overflow high-call queue) of the ACD queue of the agent to whom the call was presented. This assures that the call is presented to the next available agent. If this CCR call was also placed in other ACD queues by queue commands from the CCRM application, it is replaced in each of its other ACD queues at the head of the priority at which it had been previously queued. The CCR caller hears ringback when replaced in queue.

When a CCR call is replaced in queue, it is not relinked by time in queue. This affects both DWC display, as well as Oldest Call in Queue Statistics for CCR statistics. For example, if a CCR call is the only call in queue and it is presented, then requeued because the agent presses the Not Ready key, the DWC display shows one call in the *dddd* field (the field which displays virtual calls), with a wait time of zero. The wait time is zero even if the caller has been in queue longer than zero seconds.

Observe If a CCR call is presented to a supervisor and the supervisor activates the Observe key, call handling occurs as described in the Not Ready Key section.

Originator display The originator of a call receives a display update when the call is terminated and/or answered only if it is an internal call or within an ISDN network. When the originator places a call, the originator's display shows the originally dialed number (a CDN if that was the originally dialed number).

Assuming the originator dials a CDN, when an agent answers the call the agent's ACD DN appears. This ACD DN is either the default ACD DN of the CDN or the number that the default ACD DN diverted the call to (if the call received default treatment), or the ACD DN in which the call had been placed by a CCRM application command (if the call received controlled treatment).

If the agent's ACD DN has a name defined and the originator has CPND allowed class of service on the telephone, the name of the agent's ACD DN appears after the agent's ACD DN as shown below:

original dialed DN	Agent's ACD DN	Name of Agent's ACD DN

Only M2317, M2008, M2x16, and M2216 telephones may have CPND class of service and are the only telephones that can display name information.

Overflow by count When a call is placed in an ACD queue by default treatment for a CDN, the overflow threshold of that queue is followed. When the threshold is exceeded, any overflow destination(s) defined for the ACD DN are considered based upon the existing rules for this feature.

Controlled CCR calls that are queued by multi-queuing at an ACD queue do not count towards the ACD DN's queue size when calculating whether or not the overflow (OVTH) and BUSY thresholds are exceeded. Also, controlled CCR calls placed in an ACD queue by the Queue To command are not subject to the overflow threshold. Even if the overflow threshold has been exceeded for an ACD queue, controlled CCR calls may still be placed in that queue and will not overflow.

Therefore, a situation could occur where the combined number of ACD calls and controlled CCR calls could exceed the overflow threshold. The CCRM application determines the number of CCR calls that are placed in an ACD queue.

CDNs are not allowed as overflow destinations for Automatic Overflow.

PDP CCR and PDP hardware are mutually exclusive.

Ringing Number Pickup A telephone within the same call pickup group as an ACD agent is not allowed to pick up a ringing ACD call. This also applies to CCR calls, both controlled and default.

Set Agent Priority (SAPA) /Select Agent Position (SAGP) Commands If the supervisor issues a SAPA or SAGP command against an agent while the agent is presented with a CCR call, call handling occurs as described in Not Ready Key if the customer has installed ACD-C or ACD-D.

Supervisor Control of Queue Size When calls are routed to an ACD DN or placed in an ACD queue because of default operation, the call can receive busy tone treatment due to this feature (provided this feature is configured at the destination ACD DN and the overflow conditions necessary to activate this feature are met). The decision to provide busy depends upon origination party type (DID calls and CO calls).

Supervisor Control of Queue Size interacts strongly with the CDN's call ceiling function, since both use thresholds to control queue size. If the call ceiling threshold is less than or equal to the overflow threshold used by Supervisor Control of Queue Size, default CCR calls are not handled by the Supervisor Control of Queue Size feature because the call ceiling is always reached before the overflow threshold. When the call ceiling is reached, any new default CCR calls are not placed in the default ACD DN. They are handled by the call ceiling function.

If the call ceiling for a CDN has not been reached, calls are allowed to go to the default ACD DN. When a default CCR call reaches the default ACD DN, it is subject to treatment defined for that ACD DN (except for RAN and music), including Supervisor Control of Queue Size. If a default CCR call reaches the ACD DN and the Supervisor Control of Queue Size is in force (for example, acting on incoming calls), the CCR call receives the treatment this feature applies to it.

For controlled calls, if the CCRM application requests the call to queue to a particular ACD DN that has the Supervisor Control of Queue Size feature activated, then the call is queued at the ACD DN regardless of its overflow conditions. These controlled CCR calls do not count toward the overflow condition of the ACD DN.

Teleset Messaging Teleset Messaging allows a caller to leave a message with the Message Center while in an ACD queue without talking to an agent using telephone-based menus. This feature is supported for default CCR calls only.

Timed Overflow and Enhanced Overflow When a call is placed in an ACD queue by the default mode of operation for a CDN, the call is allowed to time overflow by the time overflow timer (TOFT) value (or timer values for Enhanced Overflow) defined for the ACD queue. CCR calls placed in an ACD queue by controlled-mode treatment are not subject to timed overflow or enhanced overflow treatment.

CDNs are not allowed as overflow destinations for enhanced overflow and timed overflow.

Trunk Night Number A CDN can be defined as a trunk night number.

Trunk priority Calls arriving by incoming trunks can have two levels of priority: high and none. If a CCR call receives default treatment, it retains its trunk priority. However, if a CCR call receives controlled treatment, the priority of the call is controlled by the CCRM application, and one of four levels of priority, not associated with the trunk, can be assigned. In controlled mode, the trunk priority of a call is overridden by the CCRM application if it issues a queue request. A trunk priority on a default call cannot be overridden.

Features requirements

Customer Controlled Routing (CCR) is package 215. It requires Enhanced ACD Routing (EAR, package 214), Unique Call ID ((mnemonic?), package 247), and Command and Status Link (CSL, package 77).

CCR reporting requires either Meridian Max 4.0 or ACD management reports (ACD-C, package 42.)

Dialed Number Identification Service (DNIS) (Advanced)

Several optional features make up the ACD Dialed Number Identification Service. After a general description of DNIS, each of these features is described in this section.

DNIS overview

The ACD Dialed Number Identification Service (DNIS) shows the last three or four digits of the dialed DN received from DID and Tie trunks on the ACD agent's display. The total is limited to 27 characters including spaces.

In telemarketing environments, Dialed Number Identification Services (DNIS) can reduce the time needed to serve a call. For example, the dialing plan can be configured so the DNIS digits can represent product lines or services. The ACD agent can then answer incoming calls with the correct response.

DNIS offers these functions:

- displays the DNIS digits on an agent's display

- displays information sent through the Application Module Link (AML) to the host computer on the agent's display

- makes DNIS information available across all modifications to Customer Controlled Routing (CCR)

- beginning with X11 release 19, makes DNIS information available across all modifications to:

    - Third Party Vendor Host Application (AML)

    - Third Party Vendor applications via the Auxiliary Processor Link (APL)

    - Network ACD (NACD) calls queued at a remote target

    - Feature Group D (FGD) trunk calls

    - Customer Controlled Routing (CCR)

    - High Speed Link (ACD MAX and Meridian MAX)

With DNIS enabled, the agent's display shows the following information:

ACOD — MEM — DNIS

Legend:

    ACOD = trunk group access code
    MEM = trunk member number
    DNIS = pulsed-in DNIS numbers

DNIS operations

When a call is received from a DID or Tie trunk, a verification is performed to make sure it belongs to a DNIS trunk group. If it does, the pulsed-in digits are collected and stored. When the proper number of digits are received, the call is auto-terminated at the ACD DN specified for that trunk. The pulsed-in DNIS digits are shown on the agent's display.

If an ACD DN is not specified for a trunk, a DNIS call defaults to the attendant, the DNIS number is not displayed, and an error message is printed at the maintenance terminal. The DNIS number is not displayed on the Attendant Console, but is displayed on the agent's display when the call is extended.

Host interface environment

On call presentation, a message is sent across a link to the host computer, if equipped. This link could be the Meridian Link or the Auxiliary Processor Link, depending on the application.

Within host interface environments, DNIS messages are sent across the link for the following applications:

- **DNIS** Call Presentation identifies the agent position for the host computer.

- **DNIS** Call Answered informs the host computer that a DNIS call has been answered. A screen of information is be presented to a terminal at the agent position.

- **DNIS** Call Disconnects informs the host computer that the agent who answered the DNIS call is available for other calls.

Messages for the host interface contain the DNIS number and an agent ID number to identify the agent position for the host computer. The host computer needs a "look-up table" in the database to reference agent position numbers and the proper ports. The host computer can then send a screen of appropriate information to a terminal at the agent position when the call is answered. If the DNIS number is less than four digits, the number field is filled with leading zeros. These are all one-way messages from the switch to the host computer.

The Auxiliary Processor Link consists of a hardware driver and a software driver used together to transmit messages and route commands between the host computer and the switch. The software driver sends message packets back and forth between the host computer and the switch.

One end of the link terminates on the Serial Data Interface (SDI) port within the Meridian 1. The other end terminates on one of the Input/Output ports on the host computer. The physical link between the host computer and the switch is a full-duplex, asynchronous, 4800-baud data link, RS-232-C compatible. The Meridian Link requires the ESDI QPC-513 G card.

Feature interactions

With X11 release 18 and later, DNIS Across Call Modifications preserves the DNIS information across certain call modifications and enhances DNIS operation and functionality. Refer to "DNIS Across Call Modifications (Advanced)" on page 97D. Some of the following feature interactions may not apply with Xl 1 release 18 and later releases.

Call Transfer Prior to X11 release 18, DNIS Across Call Modifications information was lost when calls transferred to another queue. Refer to DNIS Across Call Modifications in this document for additional information.

Display Prior to X11 release 18, DNIS only supported initial call presentation. The DNIS number was displayed for three events. Refer to "DNIS Across Call Modifications (Advanced)" on page 97 for additional information.

— calls that Overflow to the queue

— calls that Interflow to an internal destination

— during Night Service when the NCFW destination is internal

When a target agent answers a call that has overflowed, the source ACD DN is displayed with the DNIS number.

The display is cleared when certain features interact with DNIS. After completing the functions that are listed below, the DNIS number is redisplayed after the dialing party is restored:

— Call On Hold

— Call Consultation

— Calling Party Number key

Charge key

For the features interacting with DNIS, the display clears during operation. DNIS is not displayed when the following functions are accessed:

— Display Queue key

— Observe Agent key

— ACD Supervisor (ASP)

— ACD Emergency (EMR) key

— Attendant Barge-In

— Attendant Recall (ARC) key

— Conference calling

— Display (DSP) key

— Parked Calls

Digit insertion DNIS routes are not eligible for digit insertion.

Operating parameters

Auto-terminating DID trunks, Tie trunks, and FGD-DNIS trunks **(X11 release 19 and later)** support DNIS. The DNIS number is not supported on any other trunk type.

Auto-terminating ACD DNs for DNIS are specified at the trunk level.

The DNIS call does not terminate until the proper number of digits are received.

- If the call terminates on a non-ACD DN, the DNIS number is not displayed and messages are not sent across the link.

- The DNIS number display is not supported on the Electronic Switched Network (ESN) or for Trunk Digit Insertion (TDI).

If ACD DN is not specified for auto-termination, the call defaults to the attendant. The DNIS number is not displayed on the Attendant Console.

DNIS requires DNIS (package 98), ACD advanced features (package 41), and Digit Display (package 19).

Refer to the feature package and dependency chart located in *X11 features and services* (X3-3001-305).

DNIS Across Call Modifications (Advanced)

Available with **X11** release 18 and later, this feature enhances DNIS operation and functionality, and preserves the DNIS name and number display across the following call modifications:

- **Conference and No Hold Conference** redisplays DNIS information when a call returns to a simple two-party call from a conference call.

- **Transfer** displays the DNIS information on the terminating telephone if an agent transfers a DNIS call.

- **Privacy Release** redisplays DNIS information when the third party releases.

- **Mixed DNs** redisplays DNIS information when a 500/2500 telephone disconnects.

- **End-to-End Signaling** redisplays DNIS information when a call is put on hold and then restored.

Beginning with **X11** release 19, DNIS is also preserved after these modifications:

- **Parked Call** redisplays DNIS information when a parked call is accessed or recalled.

- **Network Automatic Call Distribution (NACD)** allows the DNIS information from a source ACD DN to be used at the remote target agent's set or terminal display. The DNIS information can be used to update the display or terminal screen, or in ACD-D reports.

- **Feature Group D (FGD)** supports using the DNIS number of a FGD-DNIS trunk for updating the agent's set display or terminal screen, or in ACD-D reports.

- **Third Party Vendor Applications (APL)** supports using the DNIS number for telemarketing applications.

- **Third Party Vendor Host Applications (AML)** supports host applications that use the DNIS number to bring up the agent's terminal screen.

- **Customer Controlled Routing** (CCR) can use the DNIS number to determine different call processing treatments for a DNIS trunk call.

- **High Speed Link (ACD-D Fleportiqg)** can use DNIS information to generate DNIS reports.

Operating parameters

If a system initialization occurs while daing a call modification, the DNIS number stored in the unprotected Trunk Data Block is cleared and is no longer available.

DNIS Display Across Call Modification only supports 2-party calls.

DNIS Display Across Call Modification can only be preserved if the call modifications or redirections are performed within the same switch. For example, an agent receiving a call from a DNIS trunk at Site A transfers the call to Site B. The agent answering the call at Site B will not see the DNIS information.

In NACD **(X11 release 19 and later),** to display DNIS information on a remote target agent's set does not require the DNIS package at the remote site.

An NACD call that is rerouted to a remote target node will display either the DNIS name or the DNIS number, but not both **(X11 release 19 and later).** The DNIS name appears if it is available; otherwise, the DNIS number appears. Availability of the name depends on enabling the IDC DNAM option and defining the DNIS name of an IDC-DNIS trunk call in the CPND table.

DNIS Display Across Call Modification applies only to DNIS routes.

The attendant consoles are not supported for DNIS Across Call Modification.

Feature interactions

ACD Emergency **Key (EMR) key** If the ACD Emergency Key is used during a DNIS call, the display is cleared during the operation. The DNIS number and name are displayed when the call is restored following completion of the operation.

ACD Interflow Conditions For ACD Interflow conditions, the DNIS number and name appear on the Interflow DN Digit Display.

ACD Observe Agent key When the ACD supervisor uses the Observe Agent key in Silent Observe Mode, that is, OBTN = NO during a DNIS call, the display is not cleared during operation. In other Observe modes, the DNIS number and name are 'not displayed following completion of the operation.

ACD Overflow For ACD overflow, if the DNIS call overflows to the Target agent, the DNIS name is displayed after the Source DN.

ACD Night Call Forward During night service, the DNIS number and name appear on the internal Night Service number.

Call Consultation The DNIS number and name are redisplayed after the dialing party is restored for call consultation.

Call Forward All Calls The DNIS number and name are displayed if the call has been forwarded to another station.

Call Forward No Answer The DNIS number and name are displayed for Call Forward No Answer Calls.

Call Park   When a Parked DNIS call is recalled or retrieved, the DNIS number and name are redisplayed.

Calling Party Number Key/Charge Key If the Calling Party Number Key or Charge Key is used, the DNIS number and name are restored when the operation is completed.

Call Pickup The DNIS name and number are displayed for call pickup from another station.

Call Transfer For a transferred call, the DNIS number and name are redisplayed when the call transfer is completed.

Calls on Hold The digit display is cleared. The DNIS number and name are redisplayed after the held party is removed from hold.

CLID The calling number (CLID) is displayed if a call comes from the ISDN network. If a DNIS call comes from an ISDN network, the CLID name, if defined, and the DNIS number are appended after the CLID in that order on a telephone. With the development of Name Display for DNIS, the DNIS name replaces the CLID name. If a CLID call is redirected to a telephone due to ACD Overflow, Interflow, Night Call Forward, or non-ACD features such as Hunting, Call Forward No Answer, etc., the source ACD DN or original party called is displayed after the CLID number. The DNIS name and number are appended after the redirected number.

Conference/No-Hold Conference If the conference key or no-hold conference key is used during a DNIS call, the display is cleared during the operation. When the call is restored back to the original two-party call, the display shows the DNIS number and name.

End-to-End Signaling If an agent or internal telephone performs end-to-end signaling, the DNIS information is redisplayed when the call is put on hold and then restored.

Hunting The DNIS number and name are displayed for calls configured in a hunt group.

Integrated Service Access (ISA) The basic IDC feature supports only incoming DID routes. With ISA enhancements in release 17, the IDC feature was extended to support FEX, WATS, and Tie routes over an ISDN interface, and supports ISA and non-ISA service routes. If DNAM = YES and the name is specified, the name will be displayed on any alphanumeric digit display configured with Call Party Name Display Allowed (CNDA).

Meridian Mail The display remains only through Meridian Mail transferred calls.

Mixed DNs When a 500/2500 telephone has the same DN appearance as a Business Communication Set (BCS), and the BCS is active on a DNIS call, the 500/2500 telephone will be bridged into the call when it goes off-hook. The DNIS information is redisplayed when the 500/2500 telephone disconnects.

Privacy Release If there is a multiple appearance DN, and the second DN appearance joins a conversation with a call from a DNIS trunk, the DNIS information is redisplayed when the third party releases.

DNIS on CDR (Advanced)

Available with Xl 1 release 18 and later, the DNIS number is appended to the end of the existing CDR record when the trunk disconnects. The DNIS number is put into the Start record for all cases. The DNIS number is put into the End record for all cases except when the incoming trunk disconnects first. The DNIS number is put into the Normal record when the call is established.

Operating parameters
The DNIS number is appended to the end of the CDR record following the Feature Group D digits, if the customer:

- has the DNIS and CDR packages
- the route is a DNIS route
- the new DNIS option in LD16 is ON

Name Display for DNIS (Advanced)

Name Display for DNIS displays both the DNIS number and name for IDC
DNIS calls terminating on telephones equipped with a display.

An option (DNAM) is provided at the route level for IDC routes to allow the
display of the IDC name. This supersedes the display of the route name.

All telephones with display and class of service Automatic Digit Display
(ADD) and Called Party Name Display Allowed (CNDA) support Name
Display for DNIS.

These telephones include:

— M2317

— M3000

— Meridian Modular Terminals (M2008, M2016S, M2616, M2216 ACD-1
  and M2216 ACD-2)

— Attendant consoles (Ml250 and M2250)

Name Display for DNIS requires the following packages:

— CPND (package 95)

— DNIS (package 98)

— IDC (package 113), which requires NFCR (package 49) and NCOS
  (package 32)

Prompts in the CPND data block (LD95), and in the Route data block (LD16)
allow a name to be defined for an IDC number belonging to a particular
conversion table. For a description of all the prompts and responses, refer to
X11 inputloutput guide (553-3001-400).

Feature interactions

With X11 release 18 and later, DNIS Across Call Modifications preserves the
DNIS information across certain call modifications and enhances DNIS
operation and functionality. Refer to the DNIS Across Call Modifications
section. Some of the following feature interactions may not apply with X11
release 18 and later releases.

When the following functions are activated, the DNIS on the telephone display screen disappears, and redisplays when the function is deactivated.

- Call on Hold

- Call Consultation

    Calling Party Number key

    Charge key

The feature interactions for Name Display for DNIS are the same as those for the DNIS, except for the differences defined below.

ACD Interflow For ACD Interflow conditions, the DNIS number and name appears on the display when the IFDN is internal.

ACD Night Call Forward During night service conditions, the DNIS number and name is displayed.

ACD Overflow If the DNIS call overflows to the target agent, the DNIS name is displayed with the source DN.

Conference Calls If the conference key is used during the DNIS call, the display is cleared during the conference operation. When the call is restored to the original two-party call, the new display does not show the DNIS number and name. Instead, the display shows the name associated with the route.

Application Module Link (AML) DNIS Name Display provides the ACD DN, DNIS number, and position ID in the PCI message for the Meridian link. The DNIS name is not provided.

Network ACD (NACD) DNIS Name Display is provided for ACD agents within the same switch and for network ACD.

ISDN Calling Line Identification (CLID) If a DNIS call comes from an ISDN network, the DNIS name replaces the CLID name. Additionally, the DNIS number and name are displayed on an attendant console after the CLID.

Operating   parameters

Name Display for DNIS does not apply to auto-terminated DNIS calls.

An IDC name can only be associated with an IDC number explicitly specified
for IDC translation in LD49. Partial conversions apply according to the
guidelines below.

- partial IDC conversion to a full DN, only one IDC name can be defined
  for the entire range of DNs represented by the partial IDC number (for
  example 33xx to 5006)

- partial conversion to partial DN when the DN is a valid ACD DN

For instance, if 33 to 5006 is specified, only one ID name can be associated
with 33; 3300 to 3399 cannot be individually given a name unless explicitly
specified as an IDC conversion. The IDC does not support the asterisk (*) or
telephone (#) as valid digits to translate.

With DNIS Name enabled (DNAM = YES), the DNIS name overrides all
other names, including:

- Calling Party Name or Redirected Party Name
- Route name
- Calling Line Identification (CLID) name

Routing by DNIS number (Advanced)

Routing by DNIS number enhances call distribution within an ACD system.
This enhancement allows calls to be routed to a specific ACD DN, based on
the DNIS number, instead of auto-terminating as described in the DNIS
section.

With Incoming Digit Conversion (IDC) as shown in Figure 6, a set of DID
numbers can be matched to existing internal numbering plans. Incoming
Digit Conversion (IDC) also allows the conversion of several different DID
numbers to a single ACD DN. Complete or partial DNIS numbers can be
defined in the IDC translation table using LD49. Refer to Xl 1 input/output
guide (553-3001-400) for a complete list of prompts and responses.

When the digits received are not in the IDC translation table but are valid for an ACD DN, the digits are passed without changes to the system. The IDC conversion is used only when needed. Invalid calls are routed to the attendant. Figure 8 shows how incoming DNIS numbers are handled by the Meridian system.

Figure 8
Incoming Digit Conversion
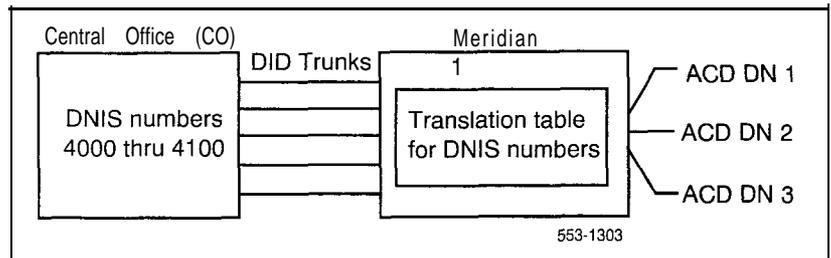
Feature interactions

The feature interactions for routing by DNIS are the same as those for the DNIS, except for the differences defined below:

Digit insertion Digit insertion for DNIS routes is not allowed.

New Flexible Code Restrictions When enabling IDC in LD15, you must respond Yes to both NFCR and IDCA. When not using New Flexible Code Restrictions (NFCR), respond No to the NFCR prompt.

Outpulsing the asterisk and octothorpe Calls with an asterisk (*) or octothorpe (#) in the DNIS route are sent to the attendant.

Operating parameters

Feature assumptions and feature requirements for routing by DNIS are the same as those for the DNIS, except as listed below.

In addition to the packaging requirements for DNIS, Routing by DNIS requires Incoming Digit Conversion (IDC) (package 113).

Enhanced ACD Routing (Advanced)

Enhanced ACD Routing (EAR) provides the ability to differentiate treatment given to ACD calls arriving from different sources, but queued to the same ACD DN. EAR also provides flexibility in controlling various ACD treatments.

A Control DN (CDN) is a special Directory Number not associated with any physical telephone or equipment, although it must fit into the numbering plan. It uses a count taken from the number of ACD DNs in a system included in the ACD DN limits of Incremental Software Management (ISM). A CDN is not configured with agents of its own, but specifies a destination, known as the default, ACD DN to which incoming calls are directed.

Multiple CDNs can place calls into the same ACD queue, so different treatments can be given to these calls placed in the same ACD queue. The treatment given to the call is determined by the parameters of the CDN, not the ACD queue.

RAN and Music treatments given to the call are defined for each CDN. Any other ACD treatment is applied as if the caller directly dialed the ACD DN. For example, if the default ACD DN is in Night service, the call to the CDN receives Night treatment specified for the default ACD DN.

Control DNs possess the following parameters:

- First RAN route and time
- Second RAN route and time
- First RAN on arrival control
- Music route number
- Report Control

In addition, each CDN also has the following attributes:

- Default ACD DN. Calls to this CDN are directed to this ACD DN.
- A ceiling value which limits the number of unanswered calls that a CDN can have at its DEFAULT ACD DN at any one time. New calls receive busy treatment once the ceiling is reached. CO trunk calls do not receive busy, they are placed in the queue.

New calls will receive busy signal until the number of calls queued against the default ACD DN drops below the ceiling value.

Calls arriving at a CDN are queued to the CDN's default ACD DN. The default ACD DN (or queue) must be local. An ACD DN which is defined for data service access cannot be used as a default ACD DN. CDN calls retain their trunk priority when placed in the ACD queue. Calls placed in the ACD queue from a CDN are treated exactly like any other calls in the queue, except for those CDN parameters which differ from the queue's parameters (for example, RAN and Music treatment).

Call ceiling

The call ceiling defines the maximum number of calls the CDN can place into its default ACD queue. Once the CDN reaches the call ceiling, any additional calls arriving at the CDN receive busy tone until the number of unanswered calls from the CDN falls below the call ceiling.

Once a call is answered by an agent in the default queue, it no longer counts against the CDN's call ceiling.

Because several CDNs can feed into the same ACD queue, the call ceiling can be used to control the flow of incoming calls from various sources into an ACD queue. By carefully configuring each CDN's call ceiling, calls from an individual CDN do not overload the default ACD DN. This allows an equitable call answering pattern. Figure 9 shows a CDN ceiling example.

Feature interactions

ACD **Ring Again** Ring Again is not allowed to operate on CDN queues. However, once the call is queued at an ACD DN, Ring Again is available if configured.

Agent display When an EAR call is either presented to, or answered by, the agent (depending on the agent's display class of service), the agent's display shows the following:

- originator information
- DNIS number (if applicable)

  Original Called Information

Figure 9
CDN call ceiling example
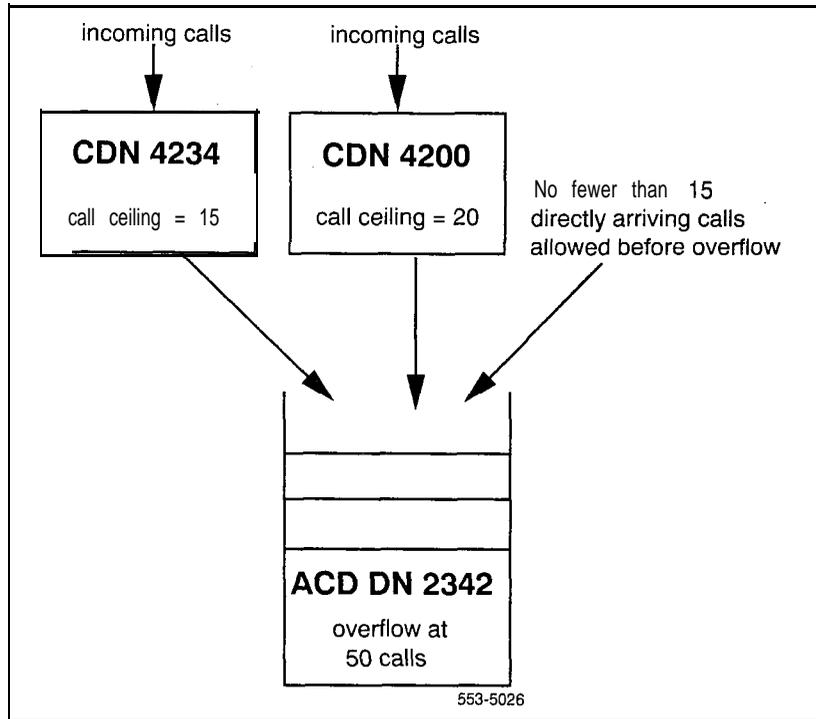
The CDN is covered by the Original Called Information category. The displaying of the CDN conforms to the current X11 software operation. Therefore, if a call initially dials a CDN, when that call is presented to or answered by an agent (depending on the agent's display class of service), the original called number, the CDN, is displayed.

If the CDN has a name defined for it, and if the agent's telephone has the CPND allowed class of service, and DNIS Name (DNAM) option is not enabled in the incoming route block, then the name of the CDN is displayed instead of the originator's or DNIS name.

Agent and Supervisor Keys   If an EAR call is presented to an agent, and the agent activates an agent/supervisor key, call handing occurs as described in Agent and Supervisor communication.

Alternate Answering Service A CDN is not allowed to be an AAA DN.

APL Messages If an AUX Processor is equipped, APL messages are sent across the APL link when an EAR call is given to an ACD agent through the default treatment

Attendant Extension Attendant extension to a CDN is supported.

Attendant Overflow Position A CDN is not allowed to be an attendant Overflow DN.

Attendant Recall Once a call is extended by the attendant to a CDN, it cannot recall back to the attendant console.

Auto-terminate Trunks Auto-terminate trunks are allowed to terminate to a CDN (auto-termination number). If the trunk is designated as a DNIS trunk, the DNIS digits are delivered to the CDN and are carried with the call to ACD queues where it ends with the EAR treatment.

AUTOVON Precedence Call A call from a precedence trunk is not allowed to wait in the ACD queue. If there are no idle agents, the call is either intercepted to the attendant or given PICP treatment if Station Loop Preemption is enabled.

Precedence calls to CDNs that are in EAR are also intercepted to the attendant or given PICP treatment if the call has to wait in an ACD queue.

Busy Verify The Attendant is not allowed to perform a Busy Verify into the originating trunk of an EAR call.

Call Forward A CDN cannot be defined as an FDN. Further, if a user has a CFW key defined on the telephone, and attempts to program the telephone to Call Forward All Calls to a CDN is not allowed and the overflow tone sounds.

Call Park Recall If an EAR call is answered by an agent who subsequently parks it, the call recalls back to the ACD DN of the agent and not the CDN.

Call Party Name Display (CPND) The CDN can be assigned a name with CPND as for any other DN. The name is also available for telephone displays and for other applications to which the CDN can pass the call.

This feature operates only for M2317, M2008, M2216 and M2616 telephones with CPND Class Of Service. When a target agent answers a call, the agent position DN or Trunk Access Code is displayed.

Call Transfer Call transfer to a CDN is supported. Call transfer to a CDN automatically puts the call in the default ACD DN queue. If the transfer is completed when there are calls in the ACD queue, the call is removed from the ACD queue and linked into the back of the ACD queue with the new originator information.

Additional Call Transfers are possible, involving network call redirection. If Telephone A at Node A calls Telephone B at Node B and Telephone B activates the transfer key, initiating a transfer to a CDN at Node C, when Telephone B completes the transfer, Telephone A's display is updated according to the mode of the CDN at Node C. If the CDN has the EAR option, Telephone A gets the default ACD DN on his/her display, if Telephone A is placed in the default ACD DN queue, otherwise the display is updated with the number of wherever the default ACD DN diverts the call.

Calls Waiting Indication (AWC) Once an EAR call has been placed in the default ACD DN, it is considered a regular ACD DN call (except the call gets its RAN and music treatment from its source CDN). Therefore, EAR calls are reflected in the AWC display as a regular ACD call.

Centralized Attendant Service An attendant at the main site can extend a call to a CDN at a remote location. The extension cannot be completed until the destination lamp is lit/wink.

Customer Night Number A CDN cannot be defined as a customer night number.

Dialed Number Identification Service (DNIS) The ACD DN the call goes to can be obtained from the auto-terminate field in the protected trunk block or can be obtained through IDC translation tables.

Calls arriving at an ACD DN by a CDN have the same DNIS information as if it has entered the ACD queue directly.

Display Waiting Calls (DWC) Once an EAR call has been placed in the default ACD DN, it is considered a regular ACD call (except the call gets its RAN and music treatment from its source CDN). Therefore, EAR calls are counted for the DWC in the "aaa" field.

DN Expansion Five to seven digit directory numbers are supported for CDNs.

Enable Interflow (ENI) key A CDN cannot have an ENI key defined for it.

Hunt A CDN cannot be defined as a FDN or Hunt DN.

Incoming Digit Conversion (IDC) CDNs can be entered as a valid termination in the IDC tables. A call can be rerouted to a CDN based on entries in the IDC tables.

Incremental Software Management (ISM) CDNs are counted as ACD DNs. For example, the limit specified by ISM for ACD DNs apply to the sum of CDNs and real ACD DNs.

Individual DN (IDN) keys An IDN key can be any DN type key, such as SCR, MCR, SCN and PLR. If an IDN key is activated while an EAR call is presented to the agent, call handling occurs normally.

Last Number Redial The stored number that can be redialed is the default ACD DN. The call is routed by the default treatment instead of the normal dialed DN, which is the CDN in this case.

Make Set Busy If an EAR call is presented to an agent, and the agent activates the MSB key, call handling occurs as described in MSB section.

Multi-Tenant Services When an EAR call first enters the default ACD queue, it receives intercept treatment if the tenant number of the first agent of the default ACD DN is denied access to the originator of the call.

Network ACD (NACD) NACD target tables are not provided for CDNs, nor are CDNs allowed as targets for NACD Routing Tables of other ACD DNs. If a remote CDN is specified as a target in an ACD DN routing table, the request is refused by the remote node and an NACD error message is issued locally indicating an invalid DN.

EAR calls can access the NACD routing tables of the destination ACD queue where they reside.

The name of the CDN is sent to the target node if the CDN is the originally dialed number.

Network CPND Network CPND includes a new prompt, RCAP, in the configuration per D-Channel to indicate whether to send the name:

- when the call is answered (ND1)
- when the call is presented (ND2).

ND1 ▪ If ND1 option is enabled, the originator's telephone is updated with the name at the time that the call is connected. Therefore, if a CDN is dialed, the originator's telephone is updated with the name of the ACD DN of the agent that answered the call. However, if RAN is given before the call is answered, the originator's display is updated with the name of the ACD DN whose queue the call is in.

ND2 ▪ If the ND2 option is enabled, the originator's telephone is updated with the name at the time that the call is presented. Therefore, if a CDN is dialed, the originator's display will show the name of the default ACD DN or the name of the ACD DN that the default ACD DN diverted the call to via NCFW, Automatic Overflow, or Interflow.

Network Call Forward No Answer Enables a person to define a trunk access code or NARS/BARS for a FDN. When the call is ringing at the remote FDN, the originator's display is updated with the redirection number (and name if defined).

Since there is no cross checking with the terminating node to verify the number entered, CDNs are allowed to be entered as remote FDNs.

If a CDN is entered as a remote FDN, the originating telephone is updated with the default ACD DN if the call is put into the default ACD DN queue, or the number of wherever the default ACD DN diverts the call if the call does not remain in the default ACD DN queue.

Network Call Redirection Enables a person to define a trunk access code or NARS/BARS for a HUNT DN. When the call is ringing at the remote HUNT DN, the originator's display is updated with the redirection number (and name if defined).

Since the terminating node does not cross check to verify the number entered, CDNs can be entered as remote HUNT DNs.

If a CDN is entered as a remote HUNT DN, the originating telephone is updated with the default ACD DN if the call is put into the default ACD DN queue, or the number of wherever the default ACD DN diverts the call if the call does not remain in the default ACD DN queue.

This feature also provides terminating number display information for transfer and call pick-up redirections. For example, if Telephone A at Node A calls Telephone B at Node B, and Telephone B transfers Telephone A to a CDN at Node C, after completing the transfer, Telephone A's display shows:

— the CDN's default ACD DN, if the call is put into the default ACD DN queue

— the number of wherever the default ACD DN diverts the call, if the call does not remain in the default ACD DN queue

The original called number (and name) is displayed on the terminating telephone, but if a non-ISDN trunk is encountered or a switch that does not support the original called number message, then the redirecting number and name is used instead. A CDN can be a redirecting number and name.

Network Call Trace A call within the ISDN network that is calling a CDN is allowed to have network call trace performed on it. The Network Call Trace (NCT) information collected for an EAR call is discussed in different scenarios:

"Telephone A" dials a CDN and the call is presented to an ACD agent immediately. The NCT output shows ORIG node and TERM node information with STAT of RING.

— "Telephone A" dials a CDN and the call is waiting in the default ACD DN. The NCT output shows ORIG node and TBD node information with STAT of ACD.

Network Call Transfer Network Call Transfer is supported for a CDN. If a caller on Node A calls a telephone at Node B and the telephone at Node B initiates a transfer to a CDN at Node A, when the transfer is completed, the trunks between Node A and B are disconnected. Handling of a call transferred to a CDN by Network Call Transfer is handled as described in Call Transfer section.

Night Key Digit Manipulation This feature allows an IDC route to have two routes defined-one for day and one for night. It also allows a new key (DRC) to toggle between the two routes on a per route basis.

Since a CDN can be defined as a termination in an IDC table, then a call from an IDC trunk can terminate to a CDN both through the day and night tables.

Night Service Treatment When the default ACD DN of a CDN is in Night Service, all EAR calls entering the ACD queue receive the Night Service treatment of the default ACD DN (Night RAN, Night Call Forward).

CDNs are valid destination DNs for the Night Call Forward DN of an ACD DN. A Night Service (NSVC) key cannot be defined for a CDN.

Calls Waiting Indication (AWC) key When the ACD queue enters Night Mode, the AWC key lamp goes dark, indicating calls are not eligible to be answered since the queue is in Night Service.

Display Waiting Calls (DWC) key When the ACD queue enters Night Mode, all of the fields in the display are zero, since calls are not eligible to be answered, and agents are not available: the queue is in Night Service.

Night Call Forward EAR calls are allowed to night call forward.

Night Mode by the NSVC key When an ACD queue enters Night Mode by the Night Service key, the EAR calls are treated as described in Night Service section.

Night RAN An EAR call receives the night RAN as it is defined for the ACD DN in which it is currently queued.

Not Ready key If an EAR call is presented to an agent, and the agent activates the NRD key, the call (if there are no idle agents) is placed at the head of priority 1 (Time Overflow high call queue) of the ACD queue of the agent to which the call was presented. This ensures that the call is presented to the next available agent. EAR calls hear ringback when replaced in queue.

Observe If an EAR call is presented to a supervisor, and the supervisor activated the Observe key, call handling occurs as it is described in Observe section.

Originator display The originator of a call gets a display update when the call is terminated and/or answered, only if it is a local call or within an ISDN network. When the originator places a call, the originator's display shows the originally dialed number (a CDN if that was the originally dialed number).

Assuming the originator dials a CDN, when an agent answers the call, the agent's ACD DN appears. This ACD DN is the default ACD DN of the CDN or the number to which the default ACD DN diverted the call.

If the agent's ACD DN has a name defined, and the originator has CPND allowed class of service on the telephone, the name of the agent's ACD DN appears after the agent's ACD DN.

Only M2317, M2008, M2216 and M2216 telephones are allowed to have CPND class of service and these are the only telephones that can display name information.

Automatic Overflow When a call is placed in an ACD queue by EAR treatment for a CDN, the Overflow Threshold of that queue is enforced. When the threshold is exceeded, any Overflow destination(s) defined for the ACD DN are considered based upon the existing rules for this feature.

CDNs are not allowed as Overflow destinations for Automatic Overflow.

Report Control A report can be turned on or off for a CDN. However, if the CDN has the report control option off, ACD-D messages are not sent for calls into the CDN and ACD-C statistics are not printed for the CDN. Therefore, it is recommended to have the same reporting option setting for a CDN and all ACD DNs to which that CDN could have calls queued, so that the reports will be accurate.

Ringing Number Pickup A telephone within the same call pickup group as an ACD agent is not allowed to pick up a ringing ACD call. This also applies to EAR calls.

Set Agent Priority (SAPA) /Select Agent Position (SAGP) Commands If, while an agent is presented with an EAR call, the supervisor issues a SAPA or SAGP command against the agent, call handling occurs normally.

Supervisor Control of Queue Size When calls are placed in an ACD queue because of EAR operation, the call can receive busy tone treatment provided this feature is configured at the destination ACD DN and the Overflow conditions necessary to activate this feature are met. The decision to provide busy tone depends upon origination party type such as DID calls or CO calls.

Supervisor Control of Queue Size interacts with CDN's Call Ceiling function since both use thresholds to control queue size. If the Call Ceiling threshold is less than or equal to the Overflow Threshold used by Supervisor Control of Queue Size, EAR calls are not handled by Supervisor Control of Queue Size since the call ceiling is always reached before the Overflow Threshold. When the call ceiling is reached, any new EAR calls are not placed in the default ACD DN. Instead, they are handled by the call ceiling function which could be busy if defined in the target ACD DN.

If the call ceiling for a CDN has not been reached, calls are allowed to go to the default ACD DN. When an EAR call reaches the default ACD DN, it is subject to treatment defined for that ACD DN (except for RAN and music), including Supervisor Control of Queue Size. If an EAR call reaches the ACD DN and the Supervisor Control of Queue Size is in force (for example, acting on incoming calls), the EAR call receives whatever treatment this feature applies to it.

Telset Messaging Telset Messaging allows a caller to leave a message with the Message Center while in an ACD queue, without talking to an agent using telephone-based menus. Telset Messaging is supported for EAR calls.

Time Overflow and Enhanced Overflow When a call is placed in an ACD queue for a CDN, the call is allowed to Time Overflow by the Time Overflow Timer (TOFT) value (or timer values for Enhanced Overflow) defined for the ACD queue. CDNs are not allowed as Overflow destinations for Enhanced Overflow and Time Overflow.

Trunk **Night Number** A CDN can be defined as a trunk night number.

Trunk Priority Calls arriving by incoming trunks can have two levels of priority: high and none. If a call receives EAR treatment, it retains its trunk priority.

Operating parameters

Enhanced ACD Routing (EAR, package 214) requires ACD Basic features (ACD-A, package 45) and ACD Advanced features (ACD-B, package 41).

Enhanced Overflow (Advanced)

Enhanced Ovefflow (EOVF) enhances Time Overflow (TOF) by increasing the number of ACD DNs targeted by an overloaded source ACD DN from 6 to 100. With Enhanced Overflow (EOVF), any particular ACD DN configured as a target can accept calls from up to 100 other ACD DNs on the same switch.

Diverting calls from the source ACD DN to the appropriate target ACD DN is con&rolled by Routing Tables configured in LD23. Up to 20 different targets can be defined for each ACD DN. A timer, from 0 to 1800 seconds, can also be defined for each source ACD DN.

Enhanced Overflow (EOVF) can define source and target queues for each ACD DN. EOVF sends incoming calls from an overloaded ACD DN to target ACD DN (like Time Ovefflow) which are local to the source ACD DN.

EOVF does not support routing calls between source and target ACD DN over network services. It is, however, a prerequisite for network routing.

Routing tables

Routing Table information is used to determine when and where calls are going from the source to target ACD DNs. There are two types of Routing Tables: Day Tables and Night Tables. The Day Table is used when the source ACD DN is in Day Service. The Night Table is used when the source ACD DN is in Night Service.

Each Routing Table at the source holds up to 20 entries, each consisting of a target ACD DN, an associated timer, and status information for the target. Targets in each table are put in order by the system according to the target timer value, from the lowest value to the highest value. The timer associated with each target is used to decide when to issue a Call Request to that target. The table entries can be entered in any order, and the Table is automatically reordered when timer values are changed. If all the timer values are the same, the entries are listed in the order they are entered.

Day Table

A Day Table is used when the queue is open, and operating normally. The targets defined in the table are independent of the Automatic Overflow (OVDN) targets. It is possible to have the same target defined for OVDN and EOVF, if defined in both the routing table and at OVDN in LD23. If no Day Table is defined, TOF operates as usual, if allowed. Basic TOF does not operate when a Day Table is defined.

When the wait time exceeds the timer for the first target, the call is placed in the source TOF queue. The call can, at this time, be answered by agents in the source ACD DN or in Target 1. The system continues to track the wait time. When the timer for the second target expires, it is automatically included in the search. The call can now be answered by agents in the source ACD queue, the first target queue, or the second target queue, Targets continue to be added to the search as the timers expire. See Figure 10 for an example of the search patterns.

Calls will not overflow through the Day or Night Table to a Target DN in Night Service.

Night Table

A Night Table operates when the source queue is in Night Service. When the Night Table is defined, Night Call Forward DNs cannot be configured. There is no priority or TOF in Night Service.

Figure 10
Day table routing

Call enters the
Source ACD DN

Day Table for the
Source ACD DN

Target 1
10 seconds

Target 5
120seconds

Target 2
20 seconds

Target 3
32 seconds

Target 4
40 seconds

Call enters Source ACD DN.
After **10** seconds, call may be answered by Target **1,** or source queue.
After 20 seconds, call may be answered by Targets 1 or 2, or source queue.
After 32 seconds, call may be answered by Targets **1, 2** or 3, or source queue.

So on up to 20 Target queues.

553-5354

When a call is directed to the source ACD DN, the timer begins. The call rings until the first timer expires. After the timer expires, the calls can be answered by agents in Target **1.** The system continues to track the wait time. When the timer for the second target expires, it is automatically included in the search. The call can now be answered by agents in the first target queue, or the second target queue. Targets continue to be added to the search as the timers expire.

A Night RAN can be provided to callers while they are waiting.

Hold in queue for Interactive Voice Response (Advanced)

Interactive Voice Response (IVR) units provide an automated method of providing and accepting information from a caller using computer-controlled voice playback to prompt for telephone touch-tone input. Hold in Queue for IVR enhances the existing CCR commands and options. After the IVR session, the IVR port transfers the call to the appropriate queue based on caller input to prompts. IVR capability can also be provided while a call is in an ACD queue. While receiving IVR treatment, the Hold in Queue for IVR feature enables the call to maintain its place in any ACD queue where it may reside.

To access this feature, a caller must reach a CDN in controlled mode. An IVR port can be a Meridian Mail agent, an IVMS agent, third-party vendor equipment appearing as a 500/2500 ACD agent telephone, or third-party vendor equipment appearing as an ACD SL-1 telephone.

Feature   interactions

Not Ready If a CCR call is presented to an IVR port and that port enters the Not Ready state, an attempt is made to terminate the call on another idle IVR port. If no idle IVR ports are available, the call is placed at the head of the priority 1 (time overflow high call queue) IVR queue. This assures that the call is presented to the next available IVR port.

If the call will receive Interruptible IVR treatment and is queued to ACD   DNs when the call was presented to the IVR port, the call remains in those ACD queues. Therefore, when the call is reinserted in its IVR queue due to the IVR port entering the Not Ready state, the call is not requeued to its ACD queues, since it was never removed from those queues.

If the call will receive Non-Interruptible IVR treatment, and the call is queued to ACD DNs when the call is presented to the IVR port, the call is removed from all of those queues. When the call is re-inserted in its IVR queue due to the IVR port entering the Not Ready state, the call is replaced in all of its ACD queues in the same places it occupied before being removed for presentation to the IVR port.

If a CCR IVR call queued to an IVR queue or presented or connected to an IVR port is removed for presentation to a *live* agent, and the agent presses the Not Ready key, the CCR will not be replaced in the IVR queue.

When a CCR call is requeued, the call receives **ringback** tone.

When a CCR call is presented to an IVR port, the call remains in its CDN (the **CDN's** queue length is not decremented).

Make Set Busy If a CCR call is presented to an IVR port, and that port enters the Make Set Busy state, call handling occurs as described above in the Not Ready feature interaction.

SAPA/SAGP Commands If a supervisor issues a **SAPA** or SAGP command against an IVR port while a CCR call is presented to it, the port enters the Not Ready state and the CCR call must be requeued. Requeueing the CCR call occurs as described above in the Not Ready feature interaction.

Only ACD-D customer agents enter the Not Ready State immediately following the issuing of a **SAPA** or SAGP command if the agent is idle or has a ringing call. If the agent is busy on a call, the agent will be placed in Not Ready when it disconnects from the active call.

Supervisor **Control of Queue Size** If a Give IVR request is received from CCR and the IVR queue in which the call will be placed has the Supervisor Control of Queue Size feature activated, the call is queued at that IVR queue regardless of its overflow conditions. CCR calls do not count toward the overflow condition of the IVR queue.

Overflow By Count CCR calls queued to a given ACD/IVR queue through Queue To requests or Give IVR requests are considered virtual calls in those queues. Therefore, CCR calls queued to IVR queues do not count toward the IVR queue's size when calculating if the overflow (OVTH) and busy (BUSY) thresholds are exceeded. Also, CCR calls placed in IVR queues using the Give IVR command are not subject to the Overflow threshold (that is, even if the overflow threshold is exceeded for a certain IVR queue, CCR calls can still be placed in that queue and will not overflow). Therefore a situation could arise where the combined number of CCR and non-CCR calls exceed the overflow threshold. The CCR application controls the number of CCR calls placed in an IVR queue.

Network ACD (NACD) NACD is not supported. CCR calls placed in an IVR queue with the Give IVR request are not subject to NACD rerouting.

Timed Overflow and Enhanced Overflow (TOVF, EOVF) TOVF and EOVF are not supported. CCR calls placed in an IVR queue with the Give IVR request cannot overflow.

Enhanced Interflow Enhanced Interflow is not supported. CCR calls placed in an IVR queue with the Give IVR request cannot interflow.

Calls Waiting Indication Key (AWC key)A *WC key for IVR queues* AWC key for IVR queues is not supported.

AWC key for ACD queues CCR calls in an ACD queue count as virtual calls. When the New Call Waiting option is enabled for an ACD queue, the **number** of CCR calls queued to the ACD DN shown by the ACD Calls Waiting Lamp (AWC) includes CCR calls.

A CCR call to hear non-interruptible IVR is removed from its ACD queues when presented to an IVR port and is returned to those queues upon completing IVR. While out of its ACD queues, the call does not show as part of the count of calls in queue, assuming the New Call Waiting option is enabled for the queues.

Display Waiting Calls (DWC key) *DWC key for IVR queues* When the DWC key is pressed to display the number of calls waiting in an IVR queue, CCR calls in that queue are counted for the display as shown below.

> aaa-bbb-ccc-dddd

where:

aaa	=	number of calls waiting in the queue (excludes CCR calls)
bbb	=	number of agent positions available
ccc	=	waiting time for the oldest call in the queue in seconds (includes CCR calls)
dddd	=	virtual calls including source TOF, Call Request Queue, and CCR calls

Calls queued to an IVR queue using the Give IVR request are considered virtual calls within the IVR queue and are counted in the ccc and dddd fields of the display. They also show up as part of the call count for the DWC lamp update if the New Call Waiting option is enabled for the IVR queue.

DWC key for ACD queues A CCR call to hear non-interruptible IVR is removed from its ACD queues when presented to an IVR port and is returned to those queues upon completing IVR. While out of its ACD queues, the call does not show as part of the count of calls in queue in the dddd field of the DWC display, does not count as part of the oldest call in queue field (the ccc field), and will not show as part of the count of calls in queue for the DWC key lamp.

Since CCR calls queued using the Give IVR request are not removed from their CDNs when presented to IVR ports, a DWC key for a CDN reflects the number of CCR calls for that CDN still unanswered by live agents.

Non-interruptible CCR IVR calls are removed from queue when presented for two reasons. The first is to prevent call interruption if an agent becomes available to take the call. The second is to prevent confusion. For example, if one CCR call is queued in an ACD DN and that call is connected to an IVR port to receive non-interruptible IVR treatment, it would appear to the agents and supervisors that a call is in queue ready to be answered if the call was not removed from queue. Since the CCR call is non-interruptible, agents would be unable to answer the call.

Night Service CCR calls cannot be placed in ACD or IVR queues in Night or Transition Modes. Calls are removed from an IVR queue when it goes into Night Service (Night Mode). The CCR application is notified of each CCR call removed so that CCR continues executing the call script. Because the CCR calls in queue are removed, they do not receive Night Call Forward or Night RAN treatments.

CCR calls presented to an IVR port or connected to IVR when an IVR queue enters Night Mode are not disconnected from their ports.

Removal of a CCR call from its IVR queue because the queue enters Night Mode does not affect its placement in any other ACD queue where it might reside.

When a call receives non-interruptible IVR, it is removed from any ACD queues where it resided upon presentation to an IVR port. If any ACD queue where the call has its place held enters Night Service during the IVR session, the call is not restored to that queue upon completing IVR.

Transition Mode via the NSVC key If an IVR queue enters Transition Mode with the Night Service key, calls already in the queue remain but no new calls may enter the queue. An IVR queue remains in Transition Mode until all of the calls which were in queue when Transition Mode was entered have been answered or abandoned, including CCR calls placed in the queue using the Give IVR command from the CCR application. When all calls are answered, the queue enters Night Mode.

If a queue in Transition Mode enters Night Mode before all eligible calls are answered (that is, the Supervisor manually takes the queue from Transition Mode using the Night Service key, or all agents log out), call processing proceeds as described above in the Night Service section.

Ongoing Status Display When the IVR queue enters Transition Mode, the ongoing status display is the same as current operation except for the new #VIRTUAL CALLS QD field. This field displays the number of CCR calls remaining to be answered (CCR calls are eligible to be answered when a queue is in Transition Mode). Calls in the Source TOF and Network queues are not shown in the new field because they are ineligible to be answered when the queue is in Transition Mode.

Display Waiting Calls key (DWC)   When the IVR queue enters Transition mode, the DWC display shows the following information:

aaa ▬ bbb ▬ ccc ▬ dddd

where

     aaa   =   number of calls waiting in the queue
     bbb   = number of agent positions available
     ccc   = waiting time for the oldest call in the queue
     dddd = the sum of CCR calls

The *aaa* field displays the number of real calls waiting in the TOF, high, and non-priority queues. Since CCR calls are considered virtual calls, they are not included in the *aaa* field. However, since CCR calls are eligible to be answered when the ACD DN queue enters Transition Mode, they are reflected in the field. Calls in the Source TOF and Network queues are not shown in the *dddd* field because they are ineligible to be answered when a queue is in Transition Mode. IVR calls are considered when determining the oldest call for the ccc field.

Night Mode via the NSVC key When an IVR queue enters the Night Mode using the Night Service key, effects on CCR are as described above in the Night Service section.

Ongoing Status Display When the IVR queue enters Night Mode, the ongoing status display is the same as current operation except for the new #VIRTUAL CALLS QD field. This field displays no calls because no calls are eligible for answering when the queue is in Night Mode.

Display Waiting Calls key (DWC) When the IVR queue enters Night Mode, all call-related fields in the display are zero since no calls are eligible for answering when a queue is in Night Mode.

Originator Display A call's originator receives only a display update when the call is terminated and/or answered only if it is a local call or within an ISDN network. When the originator places a call, the originator's display shows the originally dialed number (a CDN if that was the original dialed number).

Note that only M2317, M2008, **M2x16,** and M2216 telephones are allowed to have CPND class of service. Only these telephones can display name information.

Originator Display for Local Call Assume that as part of CCR treatment defined in a script for a CDN, when the call is answered by the IVR port, neither the IVR DN nor the IVR DN name (if defined) is shown. If the call is eventually answered by a live agent at an ACD DN, the agent's ACD DN and the name of the agent's ACD DN (if the name is defined and the originator has CPND allowed class of service) is shown on the originator display.

Upon answer at an IVR port, digital telephone screens display as if the call were still ringing in the queue (that is, the screen displayed when the telephone is connected will **not** be shown).

Originator Display for ISDN Call The display update for an ISDN call depends on the Remove Capabilities (RCAP) specified in LD17 for the primary d-channel. Acronyms input in response to the RCAP prompts in LD17 identify ISDN specific capabilities supported by the far-end node.

Table 3 indicates the information shown on the originator display, depending on what is specified for RCAP and if the call is answered by an IVR port or an ACD agent first. Assume that an ISDN call has dialed a CDN and is queued to an IVR queue (using a Give IVR request) and to an ACD DN (using a Queue To request). The information displayed includes the indicated DN and name for the DN (if one has been defined and the originator has CPND allowed class of service). Assume the Give IVR request is the first command executed for the call (when Give IVR is the first request executed for a call, the call receives ringback until it is answered).

Table 3
Originator Display for ISDN Call

	IVR port answers first	ACD agent answers first	ACD agent answers after IVR given
RCAP = ND1	CDN information given	ACD information given	CDN information was given when IVR port answered. ACD DN information will not be given.
RCAP = ND2	As soon as ringback is given, CDN information is given. By the time the port answers, the display has already been updated. No additional information will be given.	As soon as ringback is given, CDN information is given. By the time the agent answers, the display has already been updated. ACD DN information will not be given.	As soon as ringback is given, CDN information is given. By the time the agent answers, the display has already been updated. ACD DN information will not be given.

Call Transfer to CDN-Completed during IVR Assume that telephone A calls telephone B and telephone B initiates a transfer to a CDN and that part of the script treatment defined for the CDN involves a Give IVR request. If telephone B completes the transfer during the IVR session, the transferred call's (telephone A) treatments must start from the beginning of the CCR script.

Conference to a CDN-Completing during IVR Assume that telephone A calls telephone B and telephone B initiates a conference to a CDN. Also assume that part of the script treatment defined for the CDN involves a Give IVR request. If telephone B attempts to complete the conference during the IVR session, the attempt is not allowed. A conference cannot be completed until a third party answers. For this feature, an IVR port is not considered a valid third party to which a conference can be completed. While telephone B is connected to an IVR port, it is considered in queue. Telephone B can only complete the conference when a live agent answers.

Observe Observing an IVR port is not supported.

500/2500 Line Disconnect The 500/2500 Line Disconnect feature is supported.

AML Enhancements Through AML 500/2500 telephones, this feature supports invocation of basic telephony features such as release, conference, and transfer. If the AML Enhancements feature is used to control 500/2500 IVR ports, the AML Enhancements feature interacts with Hold in Queue for IVR. If a release for a 500/2500 IVR port is invoked, it is treated as a normal release — the IVR session is considered complete. Conferenced and transferred calls are treated as if they were invoked manually.

Feature packaging

Hold in Queue for IVR is package 218 (IVR). It also requires the following:

- ACD advanced features (ACD-B, package 45)
- Enhanced ACD Routing (EAR, package 214)
- Customer Controlled Routing (CCR, package 215)
- Meridian Mail, Release 8

In-Band ANI (IANI) (Basic)

In-Band ANI (IANI) allows a terminating ACD agent telephone to display the CLID number of a call coming in on a DID or Tie trunk.

When a DID or Tie trunk originates a call, the system checks to see if it belongs to an In-Band ANI (IANI) trunk group. If it does, the system collects the 10 ANI digits and displays them on an auto-terminating ACD agents digit display telephone. The number is not displayed until all 10 digits are received.

The desired auto-terminating ACD DN is specified at the trunk level (LD14). The auto-terminating ACD DN can also serve as a standard ACD DN, but ANI numbers are not displayed unless the incoming call is on an IANI trunk.

If an auto-terminating ACD DN is not available, the call will intercept to the attendant. The attendant can route the call to an ACD DN, and the ANI number is displayed on that ACD telephone display. The ANI number is displayed on both the attendant console and on the terminating ACD DN agent's digit display.

The following text describes the interactions between ACD and IANI. For a complete description of the IANI feature, *X11 features and services (553-3001-305).*

Feature interactions (IANI)

ACD Answer/Call Supervisor/Emergency If the agent presses the supervisor key (ASP) or the emergency key (EMR), the digit display is cleared when the supervisor answers the call. The display remains clear while the supervisor is active with the call. If the supervisor releases the call first, the ANI number reappears on the agent's telephone display.

ACD Interflow (not basic) If an IAN1 call interflows to another predesignated local ACD DN, the ANI number is displayed on the overflow agent's digit display. The source ACD DN is displayed following the ANI number.

ACD Night Call Forward If an ANI call is forwarded to an ACD DN, the ANI number is displayed on the ACD agent telephone.

ACD Overflow by **Count (not basic)** If an IANI call overflows to another ACD DN, the ANI number is displayed on the overflow agent's digit display. The source ACD DN is displayed following the ANI number.

Activity code If the ACNT key is activated during an **IANI** call, the display is cleared. Once the activity code has been entered and the ACNT key pressed again, the **ANI** number reappears on the agent's display.

Attendant Recall If an ACD agent is active on an **IANI** call, and activates the Attendant Recall key (ARC) to call the attendant, the agent's display will show the attendant number when the attendant answers the call. The **ANI** number reappears when the attendant releases the call.

Call Consultation If the agent is active on an **IANI** call, and presses the TRN key for call consultation, the display is cleared. When the agent restores the **IANI** call, the **ANI** number reappears.

Call Park If an agent parks an **IANI** call and it times out and recalls back to the agent, the **ANI** number is not displayed.

Call Transfer If an agent transfers an **IANI** call to another ACD DN, the **ANI** number is displayed on the terminating telephone display.

Conference If an agent activates the conference feature while active on an **IANI** call, the display is cleared. The display remains clear while the conference call is active. If the **conferenced** party releases first, the **ANI** number appears on the agent's display.

Display key (DSP) If the agent is active on an **IANI** call and presses the DSP key to display another key feature, the **ANI** number will not reappear when the DSP function is complete.

Hold If an ACD agent places an **IANI** call on hold, the **ANI** number reappears when the call is restored.

NACD (not basic) If an **IANI** call diverts to a target node as a result of NACD, the **ANI** number appears at the target node.

Time and Date If the agent presses the Time and Date (TAD) key while on an **IANI** call, the time and date will remain displayed throughout the call. To display the **ANI** number again, place the call on hold and retrieve it. The **ANI** number reappears.

Time overflow (not basic).If an ACD agent receives an IANI call due to time overflow, the ANI number is displayed. The source ACD DN follows the ANI number on the display.

Virtual agents Virtual agents are not supported for IANI calls.

Incoming Trunk restrictions (Basic)

Abandoned ACD calls are removed from both incoming call queues and Recorded Announcements (RAN) unless the incoming trunk used for the call is a loop-start trunk. Far-end disconnect on loop start-trunks is only detected during ringing. If a call is routed to a Recorded Announcement (RAN), answer supervision is returned to the trunk and ringing is stopped. On RAN completion, the call remains in the queue on Silent Hold unless Music On Hold has been specified for the ACD DN.

Note: Trunks without disconnect supervision *should not* be used for ACD systems. Incoming calls on trunks that do not provide for disconnect supervision are not released by the system when the agent terminates a call.

Music On Delay (Advanced)

Music is heard by callers in an ACD queue who are not hearing Recorded Announcement (RAN) or ringback tone, but are waiting in the queue for service. Music On Delay is triggered by the end of each RAN. The music continues until subsequent RAN is provided, or the call is either answered or abandoned.

ACD calls do not receive Music On Delay if RAN is not also specified Music On Delay is provided after the first or second RAN, and between subsequent RANs, until the call is answered or abandoned.

The music for Music On Delay is obtained from a music source by a music trunk specified in service change, and connected to a conference circuit card. Callers experiencing ACD delay are bridged into the conference circuit by a listen-only path. Each music trunk is assigned to a specific conference loop (not necessarily dedicated to music), and each ACD DN can be programmed for a different music source (if available).

Music On Hold (Basic)

Music On Hold (MUS) is provided to trunks specified for music to terminating calls that have been placed on hold.

The music is taken from a music source by a music trunk specified in service change and connected to a conference loop. Callers put on hold are bridged into the conference card by software through a listen-only path. Each music trunk is assigned to a specific conference loop, not necessarily dedicated to music. Each ACD DN can be programmed for a different music source. See *Automatic Call Distribution feature engineering* (553-2671-151) for engineering information and *X11 input/output guide* (553-3001-400) for service change information.

Night Call Forward (NCFW) (Basic)

The Night Call Forward feature allows calls to be forwarded out of the ACD queue to another destination. The Night Call Forward (NCFW) feature holds the call while verifying that the destination is available. If the destination is busy, the call is returned to the ACD queue where it originated. The system attempts to connect the call to the NCFW number until the call is either answered or abandoned.

If the source queue is in Night Mode and the Night DN is another ACD DN, the call may night call forward. The call is forwarded if **any** of the following states exist for the Destination ACD DN.

- it has agents available

- it is not in interflow state

- it is an available DN for NCFW

The caller hears **ringback** when held at the queue awaiting a free trunk or DN. Table 4 below defines the treatments for NCFW destinations that are available for incoming calls based on the call type.

Table 4
NCFW Treatment by Call Type

NCFW Destination	Call Type (Origin)			
	Telephone	**Attendant**	**CO Trunk**	**DID/Tie Trunks**
Telephone	Busy Tone	Re-Link to ACD queue	Re-Link to ACD queue	Re-Link unless eligible for CCBQ, CBQCM, or OHQ
Attendant	Busy Tone	Overflow Tone	Re-Link to ACD queue	Re-Link unless eligible for CCBQ, CBQCM, or OHQ
ACD DN	Re-Link to ACD queue	Re-Link to ACD queue	Re-Link to ACD queue	Re-Link to ACD queue
Trk ACOD	Busy Tone	Re-Link	Re-Link	Re-Link unless eligible for CCBQ, CBQCM, or OHQ
NARS	Busy Tone	Re-Link	Re-Link	Re-Link unless eligible for CCBQ, CBQCM, or OHQ
Invalid DN	Overflow Tone	Overflow Tone	Overflow Tone	Overflow Tone is returned

Note: Calls cannot be re-linked to the ACD queue if the originator of the call is eligible for Coordinated Call Back Queuing (CCBQ), Call Back Queuing to Conventional Main **(CBQCM),** or Off-Hook Queue (OHQ) tones. Also, calls cannot be returned to the ACD queue if the originator is an internal station and the NCFW destination is outside the ACD environment.

Feature interactions (NCFW)

ACD Ring Again Internal telephones with Ring Again applied against the ACD queue are not allowed to Night Call Forward (NCFW). However, if the NCFW destination is an ACD DN with ACD Ring Again defined, an internal telephone can activate ACD Ring Again against the call.

CLID Route Selection Access codes for AN1 trunks may be defined as valid NCFW destinations.

Attendant Extended Calls The attendant cannot extend NCFW calls under invalid conditions. However, the attendant may extend NCFW calls after they have been returned to the ACD DN queue. The attendant as the originator decides if the call can be returned to the ACD DN queue or not.

Call Transfer Call Transfers and Network Call Transfers cannot be completed when the NCFW treatment defined is Busy or Overflow tone. Transfers can only be completed if the NCFW call has been returned to the ACD DN queue. Network Calls use trunk numbers, **ACOD** numbers defined, instead of DNs for call identification.

Message Center When the NCFW destination defined is a Message Center telephone, the call receives Overflow tone instead of messaging, and is *not* returned to the ACD DN queue.

Network Ring Again (NRAG) Calls from trunks in the ISDN environment that are connected to a busy NCFW destination are returned to the ACD queue and are not allowed Network Ring Again.

Overflow by Number Calls linked to an internal ACD DN through NCFW treatment are eligible to Overflow by Number to the target queue of the Interflow DN (IFDN).

Precedence Calls (AUTOVON) When the ACD DN is in Night Service, Precedence Calls are not allowed to NCFW. Precedence Calls are given intercept treatment.

Ring Again (RGA) Only internal telephones and trunks on the same trunk can activate RGA against a NCFW call.

Trunk Group Busy If the NCFW number defined is a trunk access code, and the trunk has been busied out using the Trunk Group Busy key, the NCFW call is transferred to the attendant.

Time Overflow If the source ACD DN is in Night Service, NCFW calls are not eligible for Time Overflow unless the call was in the TOF queue when the ACD DN was placed into Night Service. Then the NCFW feature is used to present calls from the TOF queue to the NCFW destination. No new NCFW calls are allowed to TOF.

Feature requirements

The call in NCFW is not returned to the source DN if the call originates from a trunk eligible for the treatments listed below.

CCBQ = Coordinated Call Back Queuing

CBQCM = Call Back Queuing to Conventional Mains Off-Hook queue offer tone

Note: Loop start signaling trunks are not allowed to be diverted to the NCFW DN. If the Night Treatment defined is Recorded Announcement (RAN), there is no way to determine when the call is abandoned.

NCFW can forward a call many times as long as the NCFW DNs are ACD DNs which are not in the Interflow state. If the NCFW DN is not an ACD DN, then the call is *not* allowed to return to an ACD DN through Hunting, Call Forward No Answer (CFNA), or Call Forward All Calls.

Calls on trunks without answer supervision cannot Night Call Forward.

When a Night Call Forward destination is busy, the caller may receive silence or unpredictable ringing until the destination is free. To alleviate this condition, and to inform the call concerning the status of their call, define a Night RAN route.

Night Call Forwarding is not supported by the following features and services.

— Direct Inward System Access (DISA)

— Data Services

— Call Park Recall

Night Treatment (Basic)

This optional feature can be used to inform ACD callers that the ACD location is not in service for after-business-hours calls. These calls can be handled in three ways:

- RAN may be provided as part of the Night Treatment for after-hours ACD calls indicating that the ACD location is closed.

- Whether or not it receives RAN, the ACD call may be forwarded to another ACD location or to a Night Service number. Only internal calls or calls from trunks that provide disconnect supervision can be call forwarded for Night treatment.

- No treatment at all may be given. Callers receive **ringback** tone until the call is abandoned. No answer supervision is given to the Central Office (CO) from the switch.

The Night Treatment feature requires all agent positions to be equipped with a Make Set Busy (MSB) key. The feature is activated automatically when all agent positions assigned to an ACD DN operate the MSB key. On the **500/2500** telephone, MSB feature is activated when the agent performs a log out by entering the SPRE code plus 97.

Priority Agents (Advanced)

Priority Agents allows ACD supervisors to assign priorities to agents on an individual or group basis. Calls to an ACD DN are presented to the highest priority agent.

Priority Agents allows more experienced agents to receive more calls, or allows a supervisor to assist during high-volume times. When an agent is not available, calls are placed in the Call Waiting queue. Calls are routed to the agent of the highest priority who has been idle the longest. Priority 1 is the highest priority.

Priority Agents requires ACD-B to support the feature. Systems operating in an ACD-D environment need a minimum of X11 release 9 to support the feature.

Different machine types allow different capacities:

- 32 priorities possible

   ·   MS, N, RT, S, ST, STE, and XN machines

   ·   System options 21, 21E

- 48 priorities possible

   ·   NT and XT machines

   ·   System options 51, 61, 71, and 81

An agent can have only one priority at a time. Virtual agents are not supported by priority assignments. When the agent logs in, the priority assigned to that agent is displayed on the telephone.

The default priority is 1. Setting the priority at 1 gives all agents the same priority. Assigning agents to different priorities presents the first call to the *agent of the highestpriority* who has been idle the longest. Priority 1 is the first priority level agent to receive calls.

Using the following features, calls are presented to the next available agent of the highest priority who is idle the longest. If there are no agents available, the call is queued to the high priority or non-priority queue for that ACD DN.

- Call Forwarding
- Call Park/Recall
- Conference calls
- Interflow calls (IFDN)
- Night Call Forward DNs (NCFW)
- Ring Again (RGA)
- Transferred calls

Priority Agent Groups A Priority Agent Group can include only one agent, or all the agents for a single ACD DN. Calls are routed to the highest priority group until all agents in that group are servicing a call. Subsequent calls will then be routed to the next priority level.

Not **Ready (NRD) Key** If an agent presses the NRD key while a call is ringing, the call is routed to the next agent of the highest priority who has remained idle the longest. Calls are routed to the highest priority group until all the agents of that group are on a call. Calls are then routed to the next highest priority group, until all those agents are active on a call. If there are no agents available, the call is linked to the front of the queue from where it originated.

If a target agent presses the NRD key when presented with a Time Overflow (TOF) call from its source queue, then the call is presented to the highest priority agent who has waited the longest. If there are no idle agents, the call is returned to the TOF queue for the source ACD DN.

Time Overflow When incoming calls Time Overflow, the system searches for an idle agent in the source and target queues. The call is presented to the highest priority agent who has been idle the longest. When more than one target is defined, the system searches according to the order defined in LD23.

Priority trunks (Basic)

This optional feature allows the customer to designate certain incoming ACD trunks as having priority. When implemented through service change programs, calls to ACD DNs on priority trunks move directly to the front of any non-priority calls in the call queue. Any non-priority ACD calls in the queue maintain their position in relation to each other but are placed behind priority calls in the queue. Although ACD calls are not dropped or lost by the system, long waiting times for non-priority calls can be avoided by using Automatic Overflow.

Recorded Announcement (Basic)

Recorded Announcements are specified for each ACD DN independently of the other ACD DNs. When the system determines that an ACD caller is ready to receive a recorded announcement (RAN), the caller is connected to a recording trunk at the beginning of the RAN cycle on a one-to-one basis. If an agent becomes available to serve a caller who is currently receiving a recorded announcement (RAN), the RAN is interrupted and the call is presented to the agent.

An attendant does not receive RAN treatment when extending a call.After an attendant completes the call extension to an ACD DN, the extended caller can receive first and second RAN or Music as defined for the ACD queue. The ACD RAN is not given to calls waiting in the attendant queue.

> *Note:* If an attendant originates a call to an ACD DN, it receives **ringback** only.

A customer may want to give recorded announcements (RAN) and music to all calls except those coming in on WATS trunks, yet only have one ACD DN for answering all calls. This can be done two ways, through the use of a "dummy" queue.

- Overflow This method is useful when caller information is required. For example ISDN and CLID information is carried along with the overflowed call.

    a   Send the incoming WATS calls to the dummy queue.

    b   To Overflow calls, a telephone must be logged in to the dummy queue.

    c   Put the telephone in Not Ready

    d   Set the Overflow threshold to zero (0).

    e   Assign the desired ACD DN as the OVDN and the calls overflow to the actual ACD queue.

- Night Call Forward

    a   Send the incoming WATS calls to the dummy queue.

    b   Put the dummy queue in Night mode.

    c   Assign the desired ACD DN as the Night Call Forward DN, and the calls are forwarded to the Night Call Forward DN.

When the number of calls in a call queue exceeds the number of available agents, calls are delayed before being answered. RAN can be used to advise the caller of the delay. ACD allows a choice of two RANs per ACD DN as listed below which operate independently of each other. Unlike the Music On Hold feature, RAN does not use the conference loops.

First RAN (Prior to XI 1 release 2)   The system keeps track of how long each call receives a ringback tone before being answered and evaluates each incoming call on the basis of how long the most recently answered call had to wait. If the time expected to answer an incoming call exceeds a customer-defined time (tl), the call receives RAN at the beginning of the next RAN cycle. Delay Start must be defined in LD16, the Route Data Block (RDB).

A call that arrives in the queue when the Delay Threshold (tl) has not been exceeded receives the first RAN after the second customer-specified time of t2. After RAN, the call is placed on Silent Hold or else it receives Music-On-Delay, until answered or abandoned. A caller dialing the ACD DN hears an audible message describing a delay possibility and can disconnect, decreasing the holding time on the trunk under busy conditions.

First RAN On Arrival If the response to FROA is NO in LD23, all calls must wait for the duration of the first RAN timer (tl as specified) prior to receiving the First RAN. If the response is YES, a call that is eligible for first RAN treatment receives it immediately after entering the ACD queue.

Second **RAN** On completion of first RAN, a customer-specified timer for a Second RAN (t2) is started. Each call that has been in the queue longer than t2 seconds gets Second RAN. Second RAN is repeated every t2 seconds until the call is answered or abandoned.

RAN summary In summary, first RAN is given either immediately upon being queued or at t1 seconds later. Second RAN is presented t2 seconds following First RAN and repeated at t2-second intervals. The two RANs operate independently of each other. Both are optional and the customer can have just the first announcement or both consecutively.

The two timers, t1 and t2, have no fixed relationship to each other. This gives the customer the flexibility to specify the RAN treatment to suit the requirements of the installation. Factors such as the time allowed for the announcement and the waiting time between announcements depend on the type of recorded announcement equipment used. The system is compatible with Audichron, CODE-A-PHONE, Cook Electric and Interalia announcement machines. Refer to *QPC74 Recorded Announcement Trunk Curd description* (553-2201-194) for details on engineering and installation guidelines.

Secondary DN Call Blocking (SDNB) (Advanced)

Secondary DN Call Blocking (SDNB) blocks out new incoming calls to the Secondary DN on an agent's telephone, so the agent can handle current ACD calls without interruption. An agent telephone is considered ACD active when a call is presented or connected to the agent's ACD In-Calls key.

With Secondary DN Call Blocking enabled (SDNB = Yes), an incoming call to the Secondary DN of an ACD active agent telephone receives a busy tone.

When Hunting is allowed, and the secondary DN is called, the incoming call hunts to the Hunt DN specified.

When Hunting is denied, and the secondary DN is called, the caller hears a busy tone.

Calls cannot Camp-On or use Call Waiting; but Ring Again is available. When the ACD In-Calls key is idle, incoming calls to the Secondary DN terminate normally.

Multiple Appearance DNs

Calls to Multiple Appearance Directory Numbers as secondary DNs are connected normally, unless the agent is active with an ACD call. If there is at least one telephone within the multiple appearance group not active, the call connects to that telephone. The appearances that are ACD active are ignored.

Single Call Arrangements (SCR)

When the incoming ACD call is answered, the Secondary DN lamp lights on all telephones with that DN. Another agent cannot enter this call unless:

— the first terminating telephone releases privacy, or

— the new agent telephone has Privacy Override Class of Service.

While a call is active on a Multiple Appearance Secondary DN, no other calls can be originated from that DN, from any other appearance.

Multiple Call Arrangements (MCR)

When an incoming call is directed to the Secondary DN, the SDN rings on idle telephones only. If an agent is active on an ACD call, and becomes idle while a call is ringing on the MCR SDN, the call is not presented to the newly idled telephone.

While a call is active on a Multiple Appearance Secondary DN, other **calls** can be received on and originated on that DN from any other appearance.

Set service options to block calls in LD23. Refer to *X11 input/output guide* (553-3001-400) for a complete description of the service change programs. When the options are set as shown in Figure 11, calls to the Secondary DN are either blocked or not blocked.

Figure 11
Service options for SDNB

SDNB	Idle	Ringing	DCP	PCP
YES	Not blocked	Blocked	Blocked	Not blocked
N O	Not blocked	Not blocked	Not blocked	Not blocked

Feature interactions

ACD Not Ready When an Agent is doing post-call processing **(PCP)** while using the Not Ready (NRD) key, incoming calls to the Secondary DN are not blocked by SDNB.

Blocked Calls Calls using the following features are blocked by SDNB.

— Auto-Terminating Trunks

· The call is never presented, but the caller hears **ringback** tone.

— Calls Transferred

— Conference calls

— Dial Intercom Group calls

— Group calls

Hot Line and Hot Line List calls addressed to the Secondary DN

Manual Trunk Terminations

· The call is never presented, but the caller hears **ringback** tone.

— Overriding calls

- Private Lines

  · The call is never presented, but the caller hears **ringback** tone.

- Speed calls and System Speed calls

Calls Not Blocked With SDNB enabled, the following calls to the Secondary DN are allowed to terminate normally.

- Calls Parked may Recall

- Manual signaling, or "buzzing" a Secondary DN

- Precedence calls (AUTOVON)

Calls Not Supported The following call services are not supported.

- Calls Waiting

- Camp-On calls

- Telephone to telephone Call Waiting

Supervisor Control of Queue Size (Advanced)

Supervisor Control of Queue Size allows ACD DNs to return busy tone to selected call types. With this feature an ACD DN can return busy tone to new calls when all of the following conditions are met.

- no Interflow DN is designated

- the number of calls in the queue meets or exceeds the Overflow Threshold

- no Overflow destinations are configured, or

  · the Overflow destinations are busy, or

  · the Ovefflow destinations are in Night Service

- busy tone is configured for Supervisor Control of Queue Size (OVBU)

- the call has not arrived on a two-wire or CO/WATS/FX type trunk

Supervisor Control of Queue Size allows busy tone treatment for calls from three possible origins.

— internal calls (including transferred and conference calls)

— attendant calls

— DID or Tie trunks

The treatment can be defined for each call type as busy tone or link in queue. The default for all call origins is link in queue. See LD23 in the *X11 input/ output guide* (553-3001-400) to configure call treatment.

Figure 12 provides a flowchart explaining how the supervisor can control calls.

The following figure illustrates this feature's impact on ACD operations.

Figure 12
Flowchart for call treated with Supervisor Control of Que Size


```
                    New call arrives for          Call placed in
                         ACD DN                        queue

                            │                            ▲
                            ▼                            │
                    ╱───────────────╲        No          │
                   ╱  Number of calls in ╲───────────────┘
                   ╲   queue   OVTH?     ╱
                    ╲───────────────╱
                            │
                          Yes
                            ▼
   Call placed in OVDN   ┌───────────────────┐
        queue           │ Try overflow treatment │
                            │
        ▲  No                ▼
        │           ╱───────────────╲
   ╱─────────╲  No  ╱                 ╲
  ╱ OVDN queue ╲◄───  Yes  ╲ OVDN defined ? ╱
  ╲  BYTH?     ╱
   ╲─────────╱                   │  No
        │                        ▼
      Yes          ┌─────────────────────┐
        └─────────►│ Try interflow treatment │
                        │
        No              ▼
┌──────────────────┐   ╱───────────────╲
│ Try busy tone    │◄──  IFDN defined ? ╱
│   treatment      │   ╲───────────────╱
└──────────────────┘           │
        │                     Yes
        ▼                      ▼
   ╱─────────╲        ┌──────────────────┐
  ╱ Call     ╲  Call origin configured as Link in queue
  ╲ origin ? ╱        │  Call diverted to │
   ╲─────────╱        │Interflow destination│
        │             └──────────────────┘
        │ Call origin configured as Busy treatment
        ▼
┌──────────────────┐
│ Give busy tone   │            553-2065
│   treatment      │
└──────────────────┘
```

Figure 13
Supervisor Control of Queue Size impact on ACD operations

Number of calls meets or exceeds the Overflow Thresholds	Interflow DN defined	Overflow destination defined and available	Call origin	ACD functionality
no	n/a	n/a	n/a	unchanged
yes	yes	n/a	n/a	unchanged
yes	no	yes	n/a	unchanged
yes	no	no	internal	busy tone or link in queue
yes	no	no	attendant	busy tone or link in queue
yes	no	no	CO (WATS/ FEX)	link in queue
yes	no	no	DID or Tie	busy tone or link in queue

Feature interactions

CAS If a call is extended to an ACD DN by the Centralized Attendant Service (CAS), the call is treated like an attendant type call.

Call Transfer When an ACD DN receives a call from a transfer, the call is considered internal.

Conference When an ACD DN receives a conference call, the call is considered internal.

Interflow If an Interflow DN is configured, this feature is inactive. Conversely, if an Interflow DN is not configured, this feature is activated.

Night Service If a call is directed to an ACD DN then forwarded to another ACD DN by Night Call Forward (NCFW), the destination ACD DN treats it as a new call. The destination ACD DN programming determines the treatment. Night Call Forward (NCFW) diverts a call to a DN that operates with Supervisor Control of Queue Size, a caller may hear the night RAN first, then receive a busy tone. It is recommended that a call not be forwarded to a Night DN with this feature enabled because it is possible that the RAN is heard before the busy tone.

Operating   parameters

Supervisor Control of Queue Size is configured on an ACD DN basis. This feature and Interflow treatment are mutually exclusive.

Busy tone cannot be configured for CO trunk calls. Calls received from CO trunks are linked in queue. Central Office trunk calls Night Call Forward across Tie lines to an ACD DN can receive busy tone under the following conditions.

If the call is answered at the local switch, then transferred to the remote one.

— If the call is presented to an ACD DN that is Night Call Forwarded to a non-ACD telephone, and that telephone is Night Call Forwarded to the Night DN.

Time Overflow (TOF) queuing (Advanced)

Time Overflow (TOF) provides a way to give special handling for calls that have been waiting too long. Time Overflow (TOF) overflows unanswered calls to other queues based on a customer defined time threshold. Once a call has Time Overflowed it can be answered by either the source ACD DN or target ACD DN agents. The source ACD DN queue and the target ACD DN queues are monitored to collect Time Overflowed calls and present them to the first available agent.

The advantage of Time Overflow (TOF) is that it allows calls that have waited the longest to be answered first. Calls from the TOF queue can be answered by the first available agent of the source ACD DN or target ACD DN.

TOF operation

The high priority and non-priority queues for each ACD DN are continuously monitored to find calls which exceed the Time Ovefflow Timer (TOFT) in LD23. Calls which exceed the TOFT value are put in the TOF queue for the source ACD DN.

There is one TOF queue for each ACD DN. Call priorities are maintained when a call is placed in the TOF queue. Priorities are maintained by inserting high priority calls in the TOF queue before inserting non-priority calls.

For each queue, there are three levels of priority: non-priority, high priority, and TOF.

Non-priority queues are for calls on trunks with ACD priority not required (CLS = APN in LD14) and the Time Overflow Timer (TOFT in LD23) has not expired. This also includes internal calls.

High priority queues contain calls on trunks with ACD priority required (CLS = APY in LD14) and the TOFT has not expired.

TOF queue contains calls with the TOFT is expired. Calls in the TOF queue can be either APN, or APY trunk calls, or both.

TOF operation by time

1   A call enters the source ACD DN high priority or non priority queue.

2   The calls remains in the source queue until the call waiting time meets the TOFT value. The call is placed in the source TOF queue.

3   The call can be answered by any agent in the source ACD DN, or a target agent.

TOF operation with   Automatic Overflow

1   A call attempts to enter a source ACD DN high priority or non priority queue. The OVTH for the source ACD DN has been met or exceeded, but the BYTH for the target ACD DN has not been met.

2   The call overflows by number to the target queue. It remains there until answered, abandoned, or the   **TOFT** from the source expires.

3   When the timer expires, the call is recalled to the source TOF queue.

4   The call can be answered by any agent in the source ACD DN, or target ACD DN.

TOF operation with Interflow

1   A call attempts to enter a source ACD DN high priority or non priority queue that is in intefflow state.

2   The Interflow destination is an ACD DN and the incoming call intefflows to it. The call remains there until answered, abandoned, or the **TOFT** from the source expires.

3   When the timer expires, the call is recalled to the source TOF queue.

4   The call can be answered by an agent in the source ACD DN, or target ACD DN

Note: If the Interflow destination is not an ACD DN, the call is never recalled to the source TOF queue.

As agents become available, calls are presented based on call priority and the HPQ prompt in LD23.

When HPQ = Yes, the agent is presented with calls in this order.

1   calls in the agent's own TOF queue
These are both high priority and non-priority calls.

2   calls waiting in the agent's own high priority queue

3   calls from other TOF queues targeted to this agent's queue

4   calls waiting in the non-priority queue

When HPQ = No, the agent is presented with calls in this order.

1   calls in the agent's own TOF queue
    These are both high priority and non-priority calls.

2   calls from other TOF queues targeted to this agent's queue

3   calls waiting in the agent's own high priority queue

4   calls waiting in the non-priority queue

Empty queues Only when the source TOF queue, high priority queues, and the target TOF queues are empty is the agent presented with a call from the non-priority queue.

If the non-priority queue is empty, the agent is linked to the available agent queue.

Source TOF queues are searched first by priority then by time to find the next call to be served. All high priority calls are answered before non-priority calls regardless of how long they have waited. If the priorities are equal, the oldest calls are serviced first. Refer to the flow chart in Figure 14.

Time Overflow does not occur during the following conditions.

- ACD Ring Again calls

- Call Park Recall calls

- callers active in Telset Messaging

- calls to a source ACD DN in night service

- when the target queue is in night service

Time Overflow Timer Incoming calls may Time Overflow only if the source ACD DN has a TOFT defined. However, an agent may still answer TOF calls as the target DN for another ACD DN.

If the TOFT is defined, but the ACD DN is not configured as the target DN for any other source DN, the agent may only answer TOF calls from their own TOF queue.

- Each target ACD DN can answer TOF calls for up to six source ACD DNs.

- Each target ACD DN can answer TOF calls for up to 100 source ACD DNs when Enhanced Overflow is allowed.

- Usually, it is not feasible to allow calls from a source ACD DN in one application to be answered by target ACD DNs in another application.

  Note: If the source ACD DN sends calls to a target ACD DN without the TOFT designated in LD23, the source ACD DNs calls have high priority and get answered first. If the target ACD DN has the TOFT programmed in LD23, its own TOF calls have priority over any calls sent by TOF.

Figure 14
Call presentation to available agent

Agent position becomes available

Call in TOF queue? — Yes → Present call

No

Service high-priority queue first?

Call in other TOF queue? — Yes → Present call

No → Call in high-priority queue? — Yes → Present call

No

Call in high-priority queue? — Yes → Present call

No → No → Call in other TOF queue? — Yes → Present call

No

Call in non-priority queue?? — Yes → Present call

No

Link into idle agent's queue

553-1329

Compare with Automatic Overflow

Automatic Overflow diverts a call to a Target ACD DN when the number of calls in the Source queue meets or exceeds the Overflow Threshold (OVTH). The next call entering the queue attempts to overflow. For Automatic Overflow, the number of calls in the TOF queue must be added to the total number of calls waiting for service when a new call comes in.

Figure 15
Overflow comparison

	Automatic Overflow	**Time Overflow**
Condition	The number of calls waiting is greater than the OVTH for the source queue.	The time the call waited is greater than the TOFT for the source queue.
Action	Put the call into the high priority queue, or non-priority queues for a target ACD DN, if available.	Put the call in the TOF queue for the source ACD
Result	The call is answered by an agent in the queue where the call terminates. Only looks once at targets and if none are available, the call is linked to the source ACD DN.	The call may be answered by an agent of the source ACD DN or a target ACD DN.

Automatic Overflow only

In this configuration, a call automatically overflows to a target ACD DN based on the number of calls in the source and target queues. It can only be answered by an available agent of the target DN. To Automatically Overflow, the following conditions are required.

- A TOFT value for this ACD DN is not defined.

- An Overflow destination must be specified.

- The OVTH has been 'met or exceeded.

Figure 16
Automatic Overflow only

1. Call attempts to enter Source queue.

2. Automatically Overflow into Target queue.

3. Call is answered by an agent of the Target queue.

553. 1331
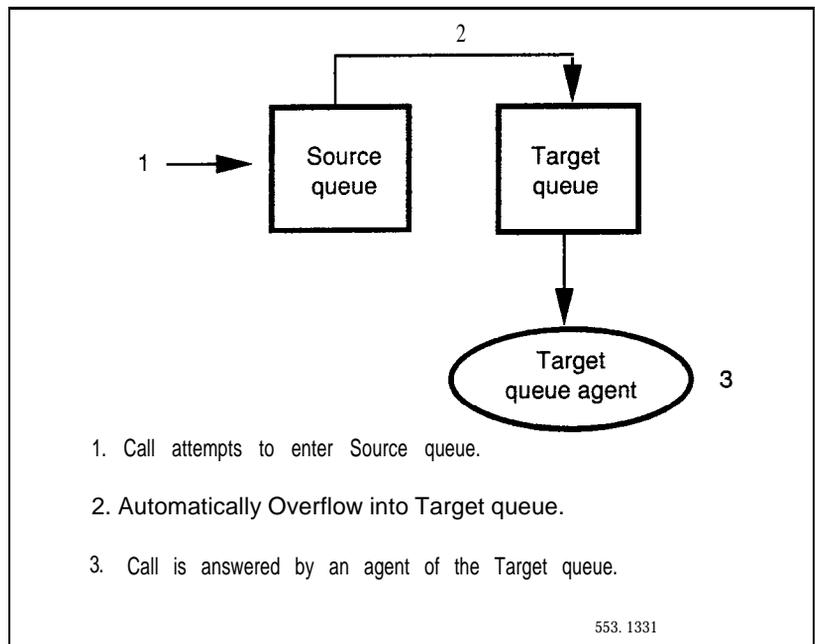
Time Overflow only

In this configuration the call overflows by time to the source queue, and is answered by any available agent in the source ACD DN, or any one of the three target queues. For a source queue to Time Overflow only, the following conditions must be met.

— The **TOFT** value must be set between 2 and 1800 seconds.

— The OVTH must be set to a value of l-2047. If set to 2047, the source queue does not Automatically Overflow.

— The Overflow destinations must be specified.

If an ACD queue is a TOF target, but does not Overflow its own calls, the **TOFT** should be set low to ensure its own incoming calls will be answered.

Figure 17
Time Overflow only

1 Call enters the source queue.
2 The call may Time Overflow   while in the Source queue, and be answered by an agent of either the Source, or Target queues.

553-1333
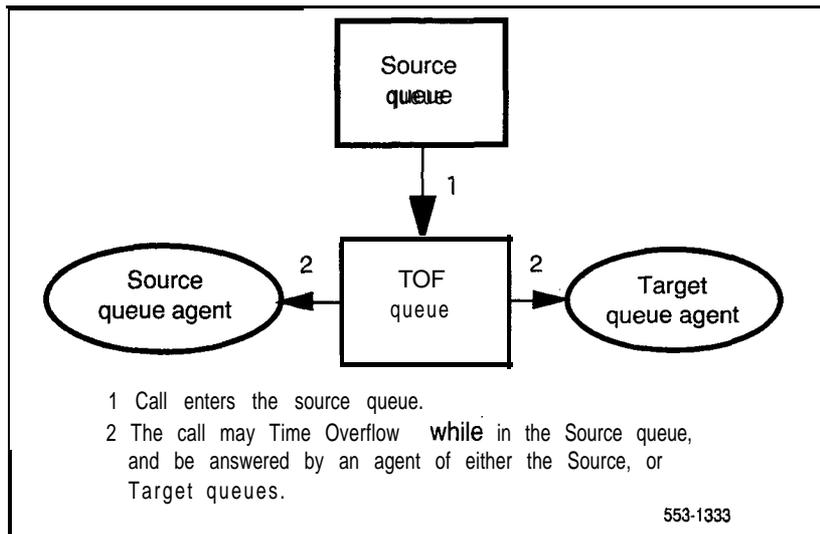
Automatic Overflow and Time Overflow

When the source ACD DN is configured to Automatically Overflow and
Time Overflow, a call could Overflow to a target queue and be recalled back
to the source queue. This same call is then placed in the source TOF queue,
and is answered by an agent of either the source or target queue. In order to
Automatically Overflow and Time Overflow, the following conditions must
be met.

- TOFT must be set between 2 and 1800 seconds.

- Specify the Overflow destinations.

- OVTH value must be met or exceeded for the source ACD DN.

- The BYTH of the target queue has not been met.

Figure 18
Automatic Overflow and Time Overflow

1 A call may enter the Source queue.
                OR
2 The call may Automatically Overflow into the OVDN queue.

3 The call may be recalled back to the Source ACD DN,
   and be placed in the Source TOF queue.

4 The call is answered by an agent of either the Source
   or Target queue.

553-5235
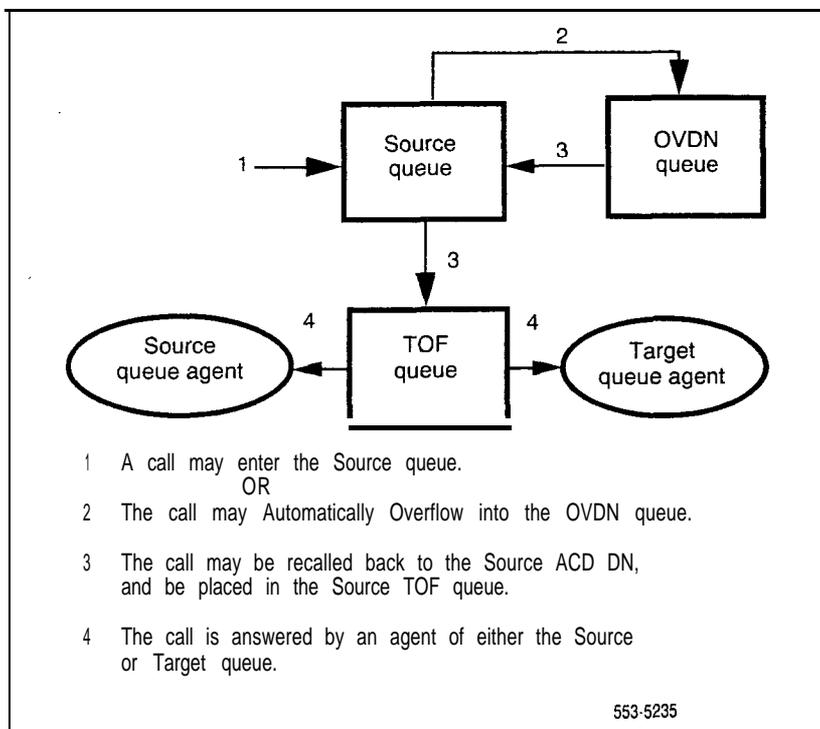
Intetflow only

In this configuration a call interflows by count to an IFDN which is an internal ACD DN. The call can only be answered by an available agent of that ACD DN. For Interflow to occur, the following conditions must be met.

- IFDN destinations must be specified.

- Interflow must be enabled either automatically (AENI), or by the supervisor's ENI key.

- The OVTH must be met or exceeded.

- No Overflow destinations are available.

- The TOFT is not defined.

- The IFDN queue is in day service.

Figure 19
Interflow by count only, answered by IFDN

1. Call attempts to enter the Source queue.

2. Call Interflows into the Target queue.

3. Call is answered by an agent in the IFDN queue.

553-1542
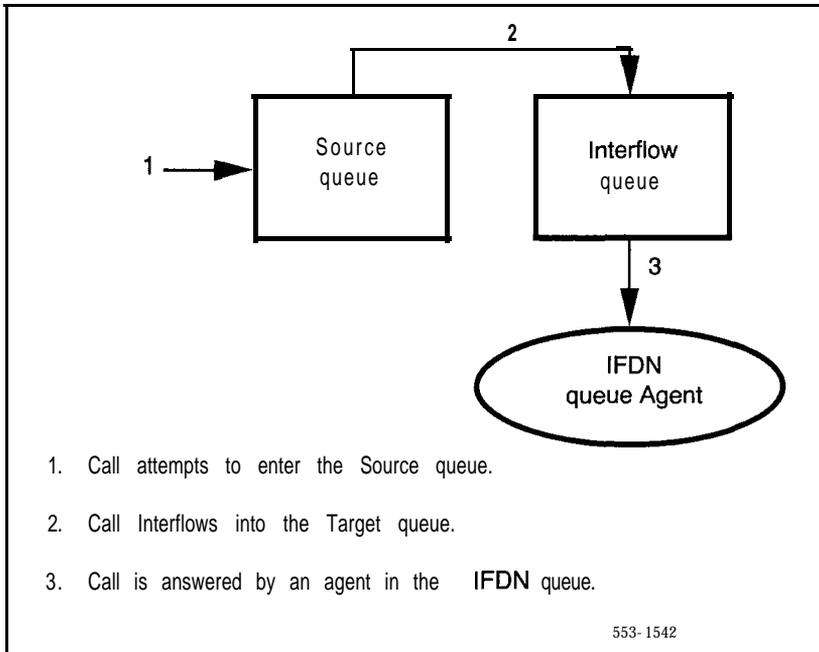
Interflow and Time Overflow

A source ACD DN can be configured to Interflow as well as recalling to source by time. The IFDN must be an ACD DN. The call is eventually answered by an agent of the source ACD DN or target queues. For these to occur, the following conditions must be met.

- The IFDN must be defined as an ACD DN.

- Interflow must be enabled either automatically (AENI), or by the supervisor's EN1 key.

- The OVDNs must be defined.

- The OVTH must be met or exceeded.

- The BYTH must be met or exceeded.

- The TOFT must be defined.

Figure 20
Interflow and Time Overflow

1. A call may enter the Source queue.
   OR
2. The call may Interflow into the FDN queue.

3. The call may be recalled back to the source ACD DN,
   and be placed in the source TOF queue.

4. The call is answered by an agent in either the source or target
   queue.

553.1541
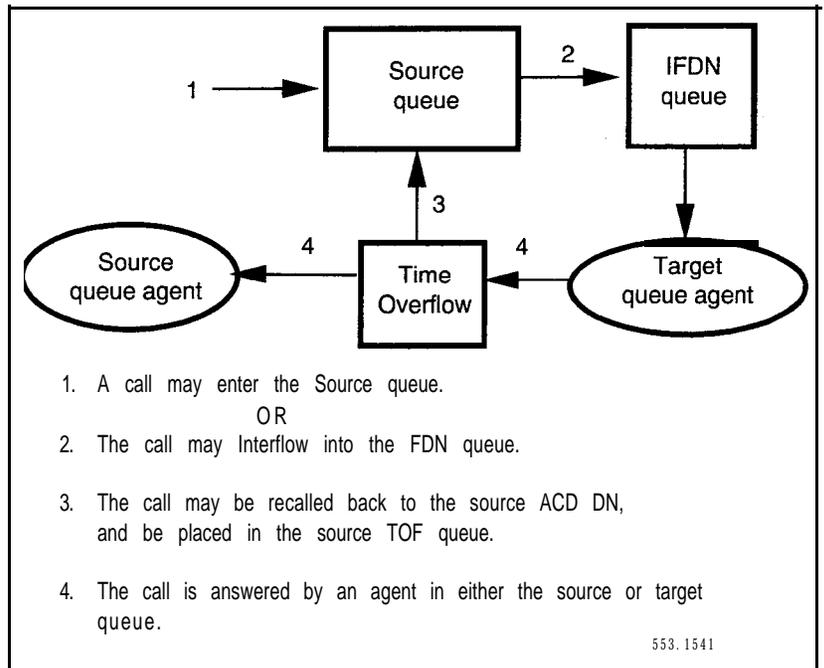
Feature   interactions

Display Waiting Calls (DWC) key A Display Waiting Calls key can be
assigned to a supervisor position for each ACD DN. The lamp state of the
Display Waiting Calls (DWC) key corresponds to the lamp state of the Calls
Waiting (AWC) key. This gives the supervisor an indication of when to use
the Interflow **(ENI)** key. A maximum of 8 DWC key appearances per queue
are allowed. The Display Waiting Calls key shows a count of calls waiting
that includes all calls in queue, but have not been presented to an agent.

The information on the Display Waiting Calls key is updated every time the
key is pressed.

When the DWC key is used, the display on the telephone follows this format.

   aaa ━ bbb ━ ccc ━ dddd

Legend:

   aaa   = all calls in queue
   bbb   =   number of positions occupied for that ACD DN
   ccc   =   waiting time for the oldest call in queue
   ddd   =   number of TOF calls aimed at the source ACD DN queue, the
             sum of all calls that *could* flow into that source queue

The ddd field indicates how many calls are in other TOF queues that target
this ACD DN. The ddd field does not include the number of TOF calls in its
own queue because that amount is already included in the aaa field. Figure 21
shows DWC display examples. A ddd of zeros indicates one TOF call is
aimed at this ACD DN from another queue.

To determine the actual number of TOF calls in any source queue, the
supervisor presses the Display key, octothorpe **(#),** followed by an ACD DN.
The system displays how many calls that ACD DN has in its TOF queue. The
supervisor can see how many calls are in his own TOF queue by entering his
own ACD DN. Figure 22 shows the display comparisons.

Figure 21
DWC display examples

Meridian digital telephones alpha-numeric display

WAITING	MAND	LWAIT	TOFQ
3	5	0:08	1

SL-1 telephones display

03 •• 05 •• 00:00 -- 01

553-5353
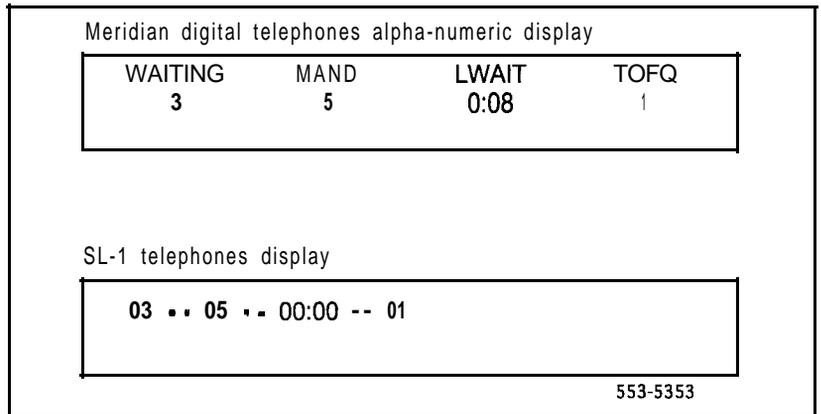
Figure 22
Displays comparison

Meridian digital telephones alpha-numeric display

8901 10 CALLS IN TOF Q

SL-1 telephones display

8901 - 10

553-5352
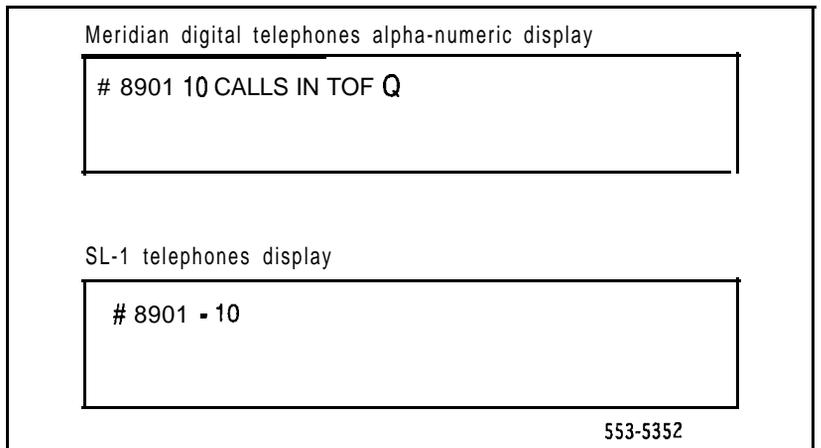
Calls Waiting indication The Calls Waiting Indication (AWC) lamp on the agent position informs the agent that the number of calls in the queue meets or exceeds a threshold value, and the call handling rate should be increased. The light states on these keys are used to indicate different conditions relating to Automatic Overflow.

With TOF, the lamp state include this ACD   DN's TOF queue when counting the number of calls waiting. These lamps have four states.

Dark The calls waiting in this ACD   DNs high priority, non-priority, and TOF queues are less than the Call Waiting Threshold (CWTH).

Steadily   lit The number of calls waiting in the high priority, non-priority and TOF queues equals or exceeds the Call Waiting Threshold (CWTH) or the Call Waiting Lamp Flash (CWLF), but is less than the Busy Threshold (BYTH). This ACD DN can receive Automatic Overflow calls, as in normal operation.

Fast flash Some calls are waiting and may be overflowing to another ACD DN. The total number of calls waiting meets or exceeds the Overflow Threshold (OVTH) or the Call Waiting Lamp Wink. When an ACD DN is in this Overflow state, all new incoming calls are diverted to a target queue, if one is available.

Flash The number of calls waiting in the high priority, non-priority and TOF queues meets or exceeds the Busy Threshold (BYTH), or the Call Waiting Lamp Flash (CWLF), but is less than the Overflow threshold (OVTH). The ACD DN cannot receive Automatic Ovefflow calls from other   queues.

ACD Ring Again Ring Again allows an internal telephone call originator to have on-hook queuing. A special ring-back tone is returned before RAN or Music is played. When the Ring Again key is activated, the call is placed in the queue and the originating telephone is then free to make and receive other calls. Only internal calls can activate Ring Again.

When Ring Again is applied to a call, that call is not eligible for Time Overflow.

Call Park Calls parked by agents are not eligible for Time Overflow. However, if a target agent parks a call after Automatic or Time Overflow, it recalls back to the target agent who parked it, if available. If the parking agent is not available, it recalls to the source queue.

Call Party Name Display (CPND) This feature operates on telephones with alphanumeric display with CNDA Class Of Service only. When a target agent answers a TOF call, the originating DN or Trunk Access Code displays, as well as the source DN and name. The originating telephone display shows the CPND name associated with the terminating telephone.

ACD Call Supervisor If an agent answers a TOF call and then presses the ACD Call Supervisor key, the agent is connected with his own supervisor, and not the supervisor of the overflowed queue from which the TOF call was directed.

Dialed Number Identification Service (DNIS) When a DNIS call is presented to an agent with display, the source ACD DN and DNIS number are displayed with the trunk Access Code (ACOD) and member number of the originating party.

Display When a target agent answers a TOF call, the source ACD DN is displayed following the originating DN or Trunk Access Code. If the originating telephone has display, it shows the dialed (source) DN, the ACD DN, and the agent for the terminating agent position.

When Call Forwarding All Calls, a call is forwarded automatically and can still Time Overflow to a target ACD DN. The originating display shows the dialed DN and the final terminating DN.

ACD Message Center An ACD Message Center is an ACD agent specially equipped with Message Indication (MIK) and Message Cancellation (MCK) indicators. When a call comes into the ACD Message Center it lights the MIK lamp. The agent answers the call and writes down the message.

By pressing the MIK key while on the call, the Message Center agent activates the Message Waiting (MWK) lamp on the originally dialed telephone. When that telephone user presses the MWK key, it lights the Message Center agent's MCK indicator. After delivering the message, while still on the call, the Message Center agent presses the MCK key to turn off the telephone user's Message Waiting indicator. When a call to the Message Center agent time overflows, it may be answered by any of the target queues defined for that telephone.

- An Integrated Message Center (IMS) is similar to the ACD Message Center in the operation and function of the MIK, MCK, and MWK key/ lamp pairs. When a call going to an ACD DN with IMS applications Time Overflows, the call can be answered by any agent in the target queues.

- The Integrated Voice Message Center (IVMS) operates much the same as IMS. Within the IVMS environment, if a call to an ACD DN time overflows, it can be answered by any agent in the target queues. It is recommended that IVMS ACD DNs also have target DNs within the IVMS environment.

  Telset messaging is supported by IMS/IVMS applications. While a call is active in Telset Messaging, it remains in the queue working up to the front of the queue. However, that call is not eligible for answering by an agent even if it is in the front of the queue. When Telset messaging is complete, the queue timer for that call is reset because the call was unavailable for ACD service.

- A call in the low priority queue active in Telset messaging is not eligible for Time Overflow treatment until after Telset Messaging is complete. The TOF Timer is reset when the caller dials "0" to signal they are now available for ACD service. Calls in the high priority queue are not eligible for Telset Messaging.

  Note: Calls in the TOF queue are not eligible for Telset Messaging.

Multi-Tenant Services   Sites with Multi-Tenant services and Overflow must have source and target agents assigned the same tenant number. If they are not, an agent may be presented with an unanswerable call. Time Overflow calls are not put into target queues, but can be presented to target agents, an agent can be presented with an unanswerable call. The call is unanswerable because target agents cannot answer a call arriving on another tenant's trunks.

Night Service Treatment   When all agents for a particular ACD DN activate the Make Set Busy (MSB) key, or the supervisor activates the Night Service (NSVC) key, that ACD DN is in the Night Service Mode. When a queue is in Night Service, the following interactions apply.

− Calls in the TOF queue:
  A TOF call can be answered by one of the target ACD **DNs** or routed for regular Night Service treatment, whichever comes first.

− Calls in high priority or non-priority queues:
  Waiting calls that are not in the TOF queue receive Night Service treatment defined for the source ACD DN. If a call overflows by count into the target queue, and the source ACD DN goes into Night Service, the call does not Time Overflow back to the source ACD DN.

− New calls to the queue:
  New incoming calls are redirected for Night Service treatment. If Night Service is not defined, the calls are not eligible for Time Overflow.

Recorded Announcement (RAN)   When a call overflows by time or count to a target ACD DN, the RAN or MUSIC specified for the source ACD DN remains in effect for all overflowed calls. With First RAN On Arrival enabled (FROA = YES), the RAN is connected when the call enters the queue. When FROA = NO, the RAN is not sent out until the First RAN Timeout (**FRRT**) has expired. Refer to *X11*   (553-3001-305) for additional information on RAN.

Operating   parameters

The Time Overflow Timer (TOFT) must be defined to give calls overflow treatment into the timed queue. However, an agent can still answer TOF calls as the target DN for another ACD DN. Incoming calls can be given Time Overflow treatment only if the source ACD DN has a defined TOFT.

If the TOFT is defined but the ACD DN is not configured as the target DN for any other source DN, the agent can only answer TOF calls from his/her own TOF queue.

— Each target ACD DN can answer TOF calls for up to six source ACD DNs.

— With Enhanced Overflow, each target ACD DN can answer TOF calls for up to 100 source ACD DNs if NACD is allowed. *See Network ACD description and operation* (553-3671-120).

— It is not recommended to allow calls from a Source ACD DN in one application to be answered by Target ACD DNs in another application.

Engineering   guidelines

The guidelines listed below are recommended for database configuration and should be followed to make this feature operate as effectively as possible.

— All agents should have a Class of Service (CLS) that allows the agent to receive incoming calls (UNR, TLD, CTD, CUN, SRE).

— All agents within the same ACD DN should have the same tenant number.

— All agents belonging to the same target ACD DN should have the same tenant number as the source ACD DN.

Data administration for TOF is provided in *XII input/output guide* (553-3001-400).

Testing basic features

This section describes how to operate and test the Basic ACD Features.

Testing requirements

The following requirements must be met before attempting the test in this section:

— Agent set installation must be completed as described in *Telephone and attendant console installation* (553-3001-215). See also the Northern Telecom Publication associated with your specific ACD Agent sets.

— If certain incoming call types (routes) are to receive priority treatment in the call queue, calls to the ACD DN can be modified by the priority assignments. This should be taken into account during testing.

— Set up your system so that at least three or four simultaneous incoming calls to the ACD DN can be readily made by the testing personnel. This may be accomplished by the temporary assignment of tie lines from the CO or another PBX, or by other methods deemed suitable for that particular installation.

— Some tests require large numbers of calls to be placed in the ACD DN queue unless the office data is modified. To make these tests more manageable, set the service changeable thresholds be set to very low values. The thresholds can be reset after testing. See *XI 1 input/output guide* (553-3001-400).

Basic agent features

The following procedures explain how to test a basic feature on Agent sets after the system has been installed. Follow the steps here to ensure your features work properly. If any problems occur, contact your technical support personnel.

Procedure 1
Testing the Not Ready key

Step	Action	Response
1	Press the Not Ready key on all agent sets associated with the ACD DN.	The Not Ready key lamp lights steadily at all agent sets.
2	Originate a call to the ACD DN.	The calling party hears ringback tone. The call is not presented to any agent set.
3	Press the Not Ready key (deactivating the feature) on one agent set.	The Not Ready key lamp goes dark. Tone ringing is heard at the agent set. The In Calls key lamp flashes.
4	Press the Not Ready key (deactivating the feature) on another ACD set.	The Not Ready key lamp goes dark.
5	Operate Not Ready key released in Step 3, reactivating the Not Ready feature.	Tone ringing stops. The In Calls key lamp goes out. The Not Ready key lamp lights steadily. Tone ringing is heard at agent idled in Step 4. The In Calls key lamp flashes at agent set (Step 4).
6	Answer the call presented to the ACD set.	Ringing stops. The In Calls key lamp lights steadily. Voice connection between caller and ACD position is established.
7	Press the Not Ready key to disconnect the call	Voice. connection is broken. The In Calls key lamp is dark. Not Ready key lamp lights steadily.
8	Release Not Ready key at all sets, and idle all ACD sets.	All Not Ready key lamps go out. All agent set lamps go out. All agent set keys are deactivated.

Note: Tone ringing is replaced by a 3-second buzz tone, if agent sets are using headset or plug-in handset.

Procedure 2
Testing the digit display

Step Action	Response
1 Originate a call to the ACD DN.	The In Calls key lamp flashes. One agent set hears tone ringing. Digit display shows
	— calls within the system
	. DN of the calling party
	— calls external to the system
	. trunk access code number (trunk route member number of the incoming call allowing the agent to give proper answer treatment)
	. trunk member number identifying a specific trunk within the group of trunks (may be used for identifying faulty trunks).
2 Agent answers the call.	The In Calls key lamp lights steadily. Ringing tone stops. A 2-way voice connection is established. Display remains lit, showing the trunk access code number and trunk member number, or the DN of the calling party.
3 Both parties disconnect.	The In Calls key lamp goes out. Display goes out.
4 Repeat Steps 1 through 3 until a call has been presented to each ACD set.	

Note: If agent sets are equipped for headset or plug-in handset operation, tone ringing is replaced by a 3-second buzz tone.

Procedure   3
Testing the Make Set Busy key

Step	Action	Response
1	Press the Make Set Busy key at all agent sets except one.	Make Set Busy lamp lights steadily at agent sets with Make Set Busy key activated.
2	Originate a call to the ACD DN.	The In Calls key lamp flashes. The agent set without the Make Set Busy lamp lit. hears ringing tone.
3	Press Make Set Busy key at the agent set presented with the call from Step 2	The Make Set Busy key lamp lights steadily. Tone ringing stops. In Calls tamp goes out. Call is directed to night service. (See Step 6).
4	Abandon call originated in Step 2. (Calling party hangs up).	Night Service on ACD DN.
5	Be sure that all sets assigned to the ACD DN have a Make Set Busy key assigned, and that it is activated.	The Make Set Busy key lamp lights steadily.
6	Originate a call to the ACD DN.	One or both of the following can occur, depending on equipped features: If night recorded announcement RAN equipped, the calling party hears recorded announcement. If call forward for Night Service equipped, the call is forwarded to a night number assigned for ACD.
7	Abandon the call.	
8	Deactivate all Make Set Busy keys.	The Make Set Busy key lamp on each set goes out.

Note: Call is not presented to any agent   set with MAKE BUSY key activated 3 Operate MAKE BUSY key at the agent set presented with the call from Step 2.

Before using your individual agent DN key, be sure at least three agent sets for the ACD DN concerned are available (for example, Make Set Busy and Not Ready lamps dark with no other features activated).

Procedure 4
Testing the agent DN key

Step	Action	Response
1	Originate a call to the ACD DN. (Do not answer the call at the agent set.)	Call is presented to the first agent, and the In Calls key lamp flashes. The first agent set hears ringing tone
2	Press the agent DN key at the first agent set.	At the first agent set: — IN-CALLS lamp is extinguished. — DN lamp lights steadily. — Dial tone is heard. The call originated in Step 1 is presented to the second agent terminal where • In Calls lamp flashes • Ringing or buzz tone is heard from speaker
3	At the first agent set, dial the agent DN associated with the second agent set.	Lamp associated with DN of the second agent flashes. Ringing or buzz tone is heard at the second agent set.
4	At the second agent set press the individual agent DN key next to flashing DN lamp. The ACD call of Step 1 is now presented to a third agent set.	At the second agent set: — In Calls lamp extinguished. — Ringing tone ceases At third agent set: — In Calls lamp flashes — ringing or buzz tone heard
5	Disconnect all calls in progress. (Release DN key at the first and second agent sets and abandon call originated in Step 1).	All agent lamps go out. All agent sets are idle.

Basic supervisor features test

These procedures explain how to use and test your basic Supervisor procedures. If any problems occur in during the testing, contact your technical support personnel.

Operating the Agent key has no effect on its associated lamp. All Agent lamps are active simultaneously, and are updated whenever an agent's status changes.

Procedure 5
Testing basic supervisor features

Step	Action	Response
1	Make a call to the ACD DN for the agent set concerned.	The agent hears ringing tone.
2	At ringing agent set, either go off-hook, or press In Calls key.	Ringing stops. At the ACD supervisor set, the Agent lamp associated with the answering agent is steadily lit (indicating busy on ACD call).
3	At agent set, press the Not Ready key.	At the agent set, the In Calls lamp goes dark, and the Not Ready key lights. At supervisor set, the Agent lamp is still steadily lit (indicating busy on ACD call).
4	At agent set, press the Not Ready or the In Calls key. Do not make any calls to the ACD DN.	At the agent set, the Not Ready lamp goes out. At the supervisor set, the Agent lamp flashes (indicating waiting for ACD call).
5	At the agent set, press the agent DN key.	At the agent set, dial tone is heard. At the supervisor set, the Agent lamp flashes (indicating busy on non-ACD call).
6	Put the agent in unstaffed state by going on-hook, and pressing the Make Set Busy key.	At the agent set, the Make Set Busy lamp lights. At the supervisor set, the Agent lamp is dark (indicating agent set not manned).

Procedure   6
Testing the Display Agent key

Step	Action	Response
1	Make various sets in the ACD queue busy on ACD calls, waiting for ACD calls, busy non-ACD calls, and unstaffed (see Procedure 4)	
2	Press the Display Agents key on the supervisor set.	The digit display shows the number of agents reporting to this supervisor in each of 4 reported states when he Display Agents key is pressed. The display looks like AA-BB-CC-DD
		AA=number of agents busy on ACD calls (including the agents in post-call work time and the supervisor).
		BB=number of agents waiting for ACD calls off-hook, or In **Calls** key pressed).
		CC=number of agents busy on non-ACD Calls.
		DD=number of unstaffed agent sets.
		The sum of these numbers equals the number of Agent keys assigned to this supervisor set. It also includes the supervisor in the total count.

You must have an ACD set with digit display capability to enable this feature.

Pressing the Display Queue key activates only the Digit Display. It has no effect on the associated lamp, which is constantly updated by the system.

Procedure   7
Testing the Display Queue key/lamp

Step	Action	Response
1	Add calls to the queue, one at a time, while periodically observing the Queue lamp. Pressing the Display Queue key and observe the digit display.	The lamp can assume any one of the following states: — **unlit** . no calls in the queue are waiting for agents. — **lit** . one or more calls are waiting for agents
2	Press Display Queue key associated with queue under test.	The digit display shows the status of the queue. The display looks like aaa = the number of calls waiting for a free agent **bbb** = the number of agents assigned to this queue and manned (regardless of which supervisor they are assigned to). ccc = the length of time (in seconds) the oldest call in the queue has been waiting The Digit Display is updated each time the Display Queue key is pressed

Basic system features

These procedures explain how to use and test your basic ACD system features. If any problems occur during testing, contact your technical support personnel.

Procedure 8
Testing the Agent Queue indication

Step	Action	Response
1	Be sure each agent set assigned to the ACD DN is idle.	No keys or lamps on the agent set are activated.
2	Originate a call to the ACD DN from an incoming trunk.	
3	Pressing the In Calls key to answer the call at the called agent set.	The In Calls key lamp lights steadily. Ringing stops. Voice connection is set up between the calling party and the agent.
4	Calling party and agent disconnect.	The In Calls key lamp goes out. Voice connection is broken.

Note: If agent sets are equipped with headsets or plug-in handsets a 3 second buzz tone replaces tone ringing at agent sets.

Procedure 9
Testing the Call Queue indication (Part 1 of 2)

Step	Action	Response
1	Make all agent sets assigned to the ACD DN busy for ACD calls	The Not Ready key lamp lights steadily.
	— press Not Ready key at each set	
	— make calls to ACD DN until each set is busy	The In Calls key lamp lights steadily. (See Procedure 7 on page 172, Steps 2 and 3).
	— busy each agent set by completing calls to, or originating calls from, each agent DN.	The DN key lamp lights steadily.
2	Originate a call to the ACD DN.	The calling party hears ringback tone

Procedure   9
Testing   the   Call   Queue   indication   (Part   2   of   2)

Step Action	Response
3	Make another call to the ACD DN.	The calling party hears **ringback** tone.
4	Make one agent available to receive ACD calls (see Step 1).	Lamp lit in Step 1 goes dark. The agent set hears ringing tone. The In Calls key lamp flashes.
5	Pressing the In Calls key.to answer the call.	The In Calls key lamp lights steadily. Ringing stops. 2 way voice connection established.
6	Press the Release key to disconnect from the call, Do not answer the next call at this time.	The In Calls key lamp goes out, then flashes again. The agent set hears ringing tone
7	Originate a call to the ACD DN.	The caller hears **ringback** tone.
6	At the agent set with the In Calls key lamp flashing, press	The In Calls key lamp goes out, and in addition
	— the Not Ready key	The Not Ready key lamp lights steadily.
	the Make Set Busy key	The Make Set Busy key lamplights steadily.
	— the DN k e y	The DN key lamp lights steadily.
9	Allow an ACD to another agent set.	Lamp lit in Step **1** goes out The In Calls key lamp flashes. The agent hears ringing tone.
10	Answer the new call at agent set.	The In Calls key lamp lights steadily. Ringing stops. A 2 way voice connection is established.
11	Disconnect all calls, and make all agents idle.	No keys or lamps are activated at any agent set.

Note: If equipped   with recorded announcement (RAN), calls originated in Step 3 may receive
announcement.

Before using your Recorded Announcements **(RANs),** take note of the first and second RAN times in effect for the ACD DN under test. Put all the agent sets on the ACD DN into the Not Ready state. Make sure that at least one agent set is not in the Make Set Busy state.

Procedure 10
Testing the Recorded Announcement

Step	Action	Response
1	Make a call to the ACD DN. Caller hears ringback.	After the first RAN time has elapsed, the caller hears the first RAN.
		After the second RAN time has elapsed, the caller hears the second RAN. The second RAN is repeated at each "second RAN time" interval.
2	Press the Not Ready key on one agent set.	The call is presented on the In Calls key of the terminal.
3	Answer the call at the agent terminal (go off-hook, and press the In Calls key	A **2-way** conversation is established.
4	Without terminating the call in Step 3, make a second call to the ACD DN	Caller hears ringback, then first RAN, then second RAN as in Step 1.
5	Release both calls.	Both agent sets are idle.

Note: RAN delays will be greater than the thresholds assigned in LD23 (FRT, SRT) if the "delayed start" option is in effect. See the *X11 input/output* guide (553-3001-400).

Procedure   11
Testing the Priority trunks

Step Action	Response
1 Make all agent sets assigned to the ACD DN busy to ACD calls	The Not Ready key lamp lights steadily.
— operate the Not Ready key at each set. (Ensure that at least one agent set has the Make Set Busy deactivated.)	
— complete nonpriority calls to ACD DN until each set is busy The In Calls key lamp lights steadily.	
busy each agent by completing calls to each agent DN	The DN key lamp lights steadily.
2 Make a nonpriority call to the ACD DN.	The calling party hears ringback.
3 Make a priority call to the ACD DN.	The calling party hears ringback.
4 Make one agent available to receive ACD calls (see Step 1).	Lamp lit in Step 1 is extinguished. Tone ringing is heard at the agent set. The lamp associated with In Calls lamp flashes (60 ipm).
5 Answer the call ringing at the agent set.	The In Calls key lamp lights steadily. Ringing stops. A 2 way voice connection ios established.
6 Release the priority call.	The nonpriority call is presented to the same agent set. Ringing is heard at the agent set, and the In Calls lamp flashes.
7 Answer the call.	A 2-way conversation. The In Calls lamp lights steadily
8 Make all agent positions idle.	

Note *1:* If equipped with record announcement (RAN), calls originated in Steps 2 and 3 may receive announcement.

Note 2: If agent sets are equipped with headsets or plug-in handsets tone ringing is replaced by a   **3-second buzz tone.**

177

Testing advanced features

This section describes how to operate and test the Advanced ACD Features.

Note: Information presented in this practice assumes that the operation of the ACD Basic Features, described in the preceding section, has been successfully completed.

Testing requirements

The following requirements must be met before attempting the test in this section:

— Agent set installation must be completed as described in *Telephone and attendant console installation* (553-3001-215). See also the Northern Telecom Publication associated with your specific ACD Agent sets.

— If certain incoming call types (routes) are to receive priority treatment in the call queue, calls to the ACD DN can be modified by the priority assignments. This should be taken into account during testing.

— Set up your system so that at least three or four simultaneous incoming calls to the ACD DN can be readily made by the testing personnel. This may be accomplished by the temporary assignment of tie lines from the CO or another PBX, or by other methods deemed suitable for that particular installation.

— Some tests require large numbers of calls to be placed in the ACD DN queue unless the office data is modified. To make these tests more manageable, set the service changeable thresholds be set to very low values. The thresholds can be reset after testing. See *X11 input/output guide* (553-3001-400).

Advanced agent features

The fallowing procedures explain how to test an advanced feature on Agent sets after the system has been installed. Follow the steps here to ensure your features work properly. If any problems occur, contact your technical support personnel.

Procedure 12
Using the Call Supervisor key

Step Action	Response
1 If there is no call currently active on the In Calls key, lift the handset and/or plug in the headset and press the Call Supervisor key.	The Call Supervisor key lamp lights steadily. Ringback tone is heard if the supervisor is idle; busy tone is heard if the supervisor is busy.
If there is a call on the In Calls key, press the Call Supervisor key.	The calling party is put on hold (the In Calls lamp flashes). The Call Supervisor key lamp lights steadily. Ringback or busy tone is heard.
2 The supervisor answers the call (Procedure 5 on page 170).	Two-way conversation between the ACD Agent and supervisor.
3 When the conversation is complete, the agent can either go on-hook or press the Release (RLS) key.	The Call Supervisor key lamp goes dark.
4 To add the calling party to the agent/ supervisor conversation, press the Call Supervisor key again.	The calling party is bridged into the conversation: the Call Supervisor lamp goes dark, and the In Calls lamp lights steadily.
5 To transfer the calling party to the supervisor, press the Release (RLS) key.	The agent is removed from the conversation, and the In Calls lamp goes dark.

Note: If the supervisor initiates a call to the agent (Call agent key--Procedure 4 on page 169), the call is presented (flashing lamp) and answered via the Call Supervisor key.

Procedure   13
Using the Emergency key

Step	Action	Response
1	A call established on the In Calls key is deemed an emergency call.	The In Calls lamp lights steadily and a two-way conversation with the calling **party.**
2	Press the Emergency key.	**Ringback** tone is heard over the two-way conversation.
		The Emergency lamp
		— remains dark if neither the assigned supervisor nor recording device is available
		— lashes if either the assigned supervisor or recording device is available.
3	The assigned supervisor and/or recording device is bridged into the conversation.	The Emergency lamp lights steadily.
4	**If** a recorder and/or teletype is equipped	
	the recorder records the conversation.	The conversation is heard when the recorder is played back.
	the teletype prints the call data	One or more of the following messages is printed:
		See the Note following this procedure.
		EMR100 RC L S C U RR MMM **EMR1** 00 AG XXXD YYYY **EMR100** OR LSCU RR MMM

Note: **EMR100** messages are interpreted as follows:

RC = the recording trunk used for the emergency recorder.

L S C U are the loop, shelf, card, and unit used for the recording trunk.

RR and MMM are the route and member numbers of the recording trunk.

AG = that an agent pressed the Emergency key.

XXXX denotes the ACD DN to which the agent is assigned. YYYY denotes the agent POS-ID. The ACD DN and the POS-ID digits, for software programming reasons, are listed backwards, and the character "A" signifies a "0" and the digit "0" signifies the end of the number. For example, the ACD DN "01A4" would denote "401" and POS-ID "5412" would denote "2145."

OR = the originator of the call.

L S C U are the loop, shelf, card, and unit of the call origin. RR and MMM parameters denote the route and member numbers of the trunk. If the call is originating from within the system, these two fields are absent.

Advanced supervisor features

The following procedures explain how to test an advanced supervisor feature on Agent sets after the system has been installed. Follow the steps here to ensure your features work properly. If any problems occur, contact your technical support personnel.

Procedure 14
Using the Observe agent key

Step	Action	Response
1	Press the Not Ready key.	The Not Ready lights steadily.
2	Press the Observe agent key.	The associated lamp lights steadily.
3	Press an Agent key associated with the lit lamp (indicating the agent is involved with an ACD call).	The conversation between the selected Agent and calling patty is heard. The digit display shows the POS-ID of the selected agent.
4	Press the Call agent key enter the conversation between the Agent and calling party.	The Call agent lamp lights steadily. A three-way conversation between supervisor, agent, and calling party is established.
	To leave the observation mode, press the Observe agent (or Not Ready) key.	Conversation between the agent and calling party can no longer be heard. The Observe agent (or Not Ready) lamp goes dark.

Note: The supervisor can monitor selected agents, one at a time, by pressing different Agent keys.

Procedure 15
Using the Call agent key

Step	Action	Response
1	Press the Not Ready key.	The Not Ready lights steadily.
2	Press the Call agent key.	The associated lamp lights steadily.
3	Press the Agent key associated with the agent to be called.	The digit display shows the POS-ID of the selected agent; ringback tone is heard. When the called agent answers, a two-way conversation is established.
4	To end the call, press the Call agent (or Not Ready) key.	Conversation is ended, and the Call agent (or Not Ready) lamp goes dark.

Note: The supervisor can call selected agents, one at a time, by pressing different agent keys.

Procedure 16
Using the Answer agent key

Step	Action	Response
1	An ACD Agent has pressed the Call Supervisor key.	The associated supervisor set hears ringing, and the Answer agent lamp flashes.
2	Press the Answer agent key.	Ringing stops, and the Answer agent lamp goes dark, A two-way conversation between the calling agent and supervisor is established.
3	To end the call, press the RLS key.	The associated lamp goes dark

Procedure 17
Using the Answer Emergency key

Step	Action	Response
1	An agent has received a call, and pressed the Emergency key.	The associated supervisor set hears continuous ringing. The Answer Emergency lamp flashes.
2	Press the Answer Emergency key. If engaged with a call, press Hold key first.	Continuous tone ringing stops, and Answer Emergency lamp lights steadily. A three-way conversation between supervisor, agent, and calling party is established. Digit display shows POS-ID of involved agent.
3	To end the call, press the RLS key.	Call ended, and the Answer Emergency lamp goes dark.

Note *1:* Once released from an emergency call, the supervisor cannot return to it. However, the emergency call can be placed on hold by pressing the Hold key.

Note 2: Once the supervisor has released from the emergency call, the agent cannot re-initiate emergency status for the same call.

Note 3: A "Listen-only" connection to the emergency call can be established by unplugging the headset/handset before pressing the Answer Emergency key.

Procedure 18
Using the Interflow key

Step	Action	Response
1	Call the inter-flow destination to ensure it is ready and able to accept additional calls.	
2	Press the appropriate Inter-flow key.	The associated lamp flashes.
3	Press the Inter-flow key again, to disable the inter-flow feature.	The associated lamp goes dark.

Note 1: Use the Display Queue key/lamp to determine when interflow is be used, and for which ACD DN.

Note 2: With interflow enabled, calls are only forwarded to the interflow destination when the number of calls waiting in the ACD DN queue exceeds the overflow threshold and no other target queue is specified or available through automatic overflow.

Procedure 19
Observing an ACD Agent

Step	Action	Response
1	Press the Not Ready key.	The Not Ready lamp lights steadily.
2	Press the Observe agent key.	The Observe agent lamp lights steadily.
3	Dial the Position-ID (POS-ID) of the agent to be observed.	The conversation between the selected agent and calling/called party is heard. The digit display shows the POS-ID of the agent. If the agent is already being observed by another supervisor, busy tone is heard. If the dialed POS-ID is invalid or the set is not an ACD set, overflow tone is heard.
4	To enter the conversation between the agent and caller(s), press the Call agent key.	The Observe agent lamp flashes. A conference between supervisor, agent, and caller is established.
5	Press the Observe agent key to exit the observation mode.	The conference is ends. Observe agent lamp goes dark.
6	Press the Not Ready key to resume normal ACD operation.	The Not Ready lamp goes dark. The set can now receive ACD calls.

Procedure 20
Observing an ACD Supervisor

Step Action	Response
1 Press the Not Ready key.	The Not-Ready lamp lights steadily.
2 Press the Observe agent key.	The Observe agent lamp lights steadily.
3 Dial the POS-ID of the supervisor to be observed.	The conversation between the selected supervisor and calling/called party is heard. The digit display shows the POS-ID of the supervisor.
	Busy tone is heard f the selected supervisor is observing another agent or supervisor.
	If the POS-ID is invalid or if the set is not an ACD set overflow tone is heard
	If the set attempting to observe a supervisor is not assigned an Allow Observation Of Supervisor class Of service, overflow tone is heard.
4 Press the Call agent key to enter the conversation between the supervisor and connected party.	The Observe agent lamp flashes. A conference between observing supervisor, observed supervisor and connected party is established.
5 Press the Observe agent key.	The conference is ends. Observe agent lamp goes dark.
8 Press the Not Ready key o resume normal ACD operation.	The Not Ready lamp goes dark. The set can now receive ACD calls.

Procedure 21
Calling an ACD Agent

Step	Action	Response
1	Press the Not Ready key.	The Not Ready lamp lights steadily.
2	Press the Call agent key.	The associated lamp lights steadily.
3	Dial the POS-ID of the agent to be called.	If agent is idle, the agent's set rings, and the Supervisor lamp flashes.
		If the agent is conversing with another supervisor by the Supervisor key, busy tone is heard.
		If the agent is conversing on a key other than the In Calls or Supervisor key, the agent hears buzz.
4	Agent presses Supervisor key to answer the call.	The Supervisor lamp at the agent's set lights steadily. Conversation between agent and supervisor is established.
5	Press the Call agent (or RLS) key to terminate the call.	Conversation is ends. Call agent lamp goes dark.

Advanced system features

The following procedures explain how to test an advanced system feature on Agent sets after the system has been installed. Follow the steps here to ensure your features work properly. If any problems occur, contact your technical support personnel.

Procedure 22
Logging on an ACD set with the Agent ID option

Step	Action	Response
1	Occupy an unstaffed ACD position. Be sure the headset/handset is unplugged from the set, then press the In Calls key.	
2	Plug the headset/handset.	Access to all features, except receiving calls on the In-Calls key is allowed from the set.
3	Press the In Calls key of the set	The In Calls key lamp remains unlit.
		The Not Ready key lamp lights.
		The Make Set Busy key lamp goes out if it was previously lit.
		The ACD DN and supervisor position to which the agent position is assigned are shown on the set's digit display.
		The position is now logged in can access all ACD features.

Procedure 23
Logging on an ACD set without the Agent- D option defined

Step Action	Response
1 Occupy an unstaffed ACD position. Be sure the headset/handset is unplugged from the set, then press the In Calls key.	
2 Plug the headset/handset.	Access to all features, except receiving calls on the In-Calls key is allowed from the set.
3 Press the In Calls key of the set.	The In Calls key lamp lights and a special (interrupted) dial tone is heard.
4 Key in the assigned 4-digit Agent ID code on the dial pad of the set. Note the following:	
The Agent ID code is within range, and no one else is already logged in with that code.	The In Calls (and MSB, if previously lit) key goes out, the NRD key lights, and the ACD DN and supervisor positions are shown in the Digit Display. The set is now logged on and can access all the ACD features.
The Agent- D code is out of range, or the normal time-out elapsed before all four digits have been keyed in.	Overflow Tone is heard and, after normal time-out of overflow tone, the In Calls key lamp goes blank. Repeat the log on procedure.
Someone else is currently logged on with that Agent ID code.	Busy tone is heard, and the In-Calls lamp goes out after the normal busy tone time-out.

Procedure 24
Logging out from an ACD set

Step	Action	Response
1	Occupy an agent position which is currently logged in but	
	has no call active on the set	All the feature keys are unlit.
	has no calls held on the set.	The In Calls or DN key lamp is dark.
2	If Make Set Busy is not equipped, unplug the headset from the set or place the handset on-hook.	The set is now logged out. This assumes that agents are allowed to log out by unplugging the headset/handset.
	If Make set Busy is equipped, press the Make Set Busy key.	Make Set Busy key lamp lights, and the set is logged out.

Procedure 25
Walkaway/Return ACD Set (Part 1 of 2)

Step	Action	Response
	Walkaway from the set	
1	Using Procedure 11 on page 176 log on to an unoccupied agent position.	The Not Ready key lamp lights.
2	Press the Not Ready key to allow ACD calls to be presented to the position.	The Not Ready key lamp goes out.
3	With Manual answer, when an ACD call is presented to the position, press the In Calls key to answer the call.	Ringing stops, the In Calls key lamp lights steadily, and a voice path is established between you and the calling party.
	With Call Forcing, when an ACD call is presented to the position you will hear a 500-millisecond buzz and then be connected to the calling party.	The In Calls key lamp lights steadily, and a voice path is established between you and the calling party.
4	Inform the calling party that you are about to leave the line momentarily, then press the Hold key.	The In Calls key lamp flashes indicating the calling party is on hold.

Procedure 25
Walkaway/Return ACD Set (Part 2 of 2)

Step	Action	Response
5	Unplug the headset/handset from the set.	The In Calls key lamp on the set continues to fast flash.
	Return to the set	
6	Plug the headset/handset into the set.	The In Calls key lamp continues to fast flash.
7	Press the In Calls key.	The In Calls key lamp lights steadily. Voice communication is reestablished between you and the calling party.

Note *1:* The procedures in this chart also apply to calls originated from or received on the DN key of the set. Walkaway and return are also possible when the set is in the Not Ready state; i.e., the Hold key is operated when the Not Ready key lamp is lit. In either case, the DN key lamp or Not Ready key lamp will change from steadily lit to flashing when the Hold key is pressed, and the headset/handset is unplugged from the set.

Note 2: If the calling party disconnects while the agent is in walkaway, the In Calls key lamp goes dark and the Not Ready key lamp flashes. When the agent returns from the walkaway and plugs the headset/handset into the set, the Not Ready key lamp lights steadily. The agent must press the In Calls or Not Ready key to reenter the agent queue.

Note 3: With Flexible Call Force, the 500 millisecond buzz is not heard

Procedure 26
DN key activation for ACD sets

Step	Action	Response
1	Occupy an agent position that is currently logged in.	All active features operate as usual.
2	Press a DN key (not an ACD DN key) to	
	initiate a call	The associated lamp indicator is lit and you hear dial tone.
	answer a non-ACD call	Ringing stops, and the lamp goes steadily lights.

Note: The same results will occur for Step 2 if the procedure for Step 1 is 'Occupy an agent position which is not restricted from using DN keys when logged out (or logged in).'

List of terms

This section provides an alphanumeric list of the mnemonics used in this
document and their related 'terms.

AAA

Attendant Alternate Answering

ACA

Automatic Call Answer

ACD

Automatic Call Distribution system

ACD-A

ACD Package A, Basic Features (minimum for ACD service)

ACD-B

ACD Package B, Advanced Features

ACD-Cl

ACD Package C 1, Load Management

ACD-C2

ACD Package C2, Enhanced Load Management

ACD-D

ACD Package D, Enhanced Management Displays (with ADS)

ACD DN

ACD Directory Number

ACOD

Access Code

ADM

Add-on Data Module

ADS

Auxiliary Data System

AGT

ACD Agent key identifier

AID

Agent ID mode

AIOD

Automatic Identification of Outward Dialing

AML

Application Module Link

ANI

Automatic Number Identification

APL

Auxiliary Processor Link

ARC

Attendant Recall key

APL

Auxiliary Processor Link

ASP

ACD Supervisor key

AUX

Auxiliary Processor

AWC

Agent Calls Waiting lamp

BACD

Base ACD

BARS

Basic Alternate Route Selection

BRI

Basic Rate Interface

BSY VRF

Busy Verify

BYTH

Busy Threshold

CBQCM

Call Back Queuing to Conventional Main

CCBQ

Coordinated Call Back Queuing

CCR

Customer Controlled Routing

CCRM

Customer Controlled Routing Module

CDN

Control Directory Number

CDR

Call Detail Recording

CFNA

Call Forward No Answer

CLID

Calling Line Identification

CLS

Class of Service

CPND

Call Party Name Display

c o

Central Office

CNDA

Call Party Name Display Allowed

CWLF

Calls Waiting Lamp Flash threshold

CWLW

Calls Waiting Lamp Fast Flash threshold

CWTH

Calls Waiting Threshold

Data Agent

Agent station assigned to an ADM

DAL

Data Agent Login with MSB option

DCP

Direct Call Processing

DDSP

Digit Display

DID

Direct Inward Dialing

DISA

Direct Inward System Access

DN

Directory Number

DND

Do Not Disturb

DNIS

Dialed Number Identification Service

DSP

Display key

DWC

Display Waiting Calls (supervisor Display Queue key)

EAR

Enhanced ACD Routing

EMR

Emergency key

ENI

Enable Interflow key

EOVF

Enhanced Overflow

ESN

Electronic Switched Network

FCF

Flexible Call Force

FDN

Forward DN

FORC

        Call Forcing

FROA

        First RAN On Arrival

FRRT

        First RAN Route

FRTT

        First RAN Route Timer

F X

        Foreign Exchange route or trunk

FEX

        Foreign Exchange route or trunk

HOT

        Hot Line

HPQ

        High Priority Queue

IANI

        In-Band AN1

IDC

        Incoming Digit Conversion

IDN

        Individual Directory Number

IFDN

        Interflow Directory Number

IMS

        Integrated Messaging System

I/O

Input/Output port or features

ISDN

Integrated Digital Network Services

ISM

Incremental Software Management

IVMS

Integrated Voice Messaging System

LAGP

List Agent Priority

LCD

Liquid Crystal Display

LED

Light Emitting Diode

MADN

Multiple Appearance Directory Number

MAXP

Maximum Positions assigned

MCK

Message Cancellation key

MCR/MCN

Multiple Call Ringing/Non-ringing

MEM

Trunk Member number

MIK

Message Indication key

MSB

Make Set Busy

MURT

Music trunk Route

MUS

Music On Delay

MWK

Message Waiting key

NARS

Network Alternate Route Selection

NCFW

Night Call Forward

NCT

Network Call Trace

NCWL

New CA11 Waiting Lamp

NFCR

New Flexible Code Restriction

NITE

Night Forwarding number

NRAG

Network Ring Again

NRD

Not Ready

NRRT

Night RAN Route

NSVC

Supervisor control of Night Service

OBTN

Observation Tone

OBV

Observe Agent key

OCN

Original Called Number

OHQ

Off-Hook Queue

OVBU

Overflow Busy treatment for Supervisor Control of Queue Size

OVDN

Overflow DN

OVTH

Overflow Threshold

PBX

Private Branch Exchange

PCP

Post-Call Processing

POS-ID

ACD agent Position Identifier

PRI

Priority Agent

PVR/PVN

Private Line Ringing/Non-ringing

RAC

        Route   Access

R A G

        Call Agent key

RAN

        Recorded   Announcement

RDB

        Route Data Block

RGA

        Ring Again

RLDN

        Release Link trunk DN

R L S

        Release key

RPRT

        ACD Report Control

S A G P

        Select Agent Position

SAPA

        Set Agent Priority

SCR/SCN

        Single Call Ringing/Non-ringing

SDI

        Serial Data Interface port or card

SDNB

        Secondary DN Call Blocking

SIG SRC

Signal Source key

SPCP

Separate Post-Call Processing

SPRI

Set Agent Priority assignment

SQ 01

Queue one (for Automatic Overflow)

SQ 02

Queue two (for Automatic Overflow)

SQ 03

Queue three (for Automatic Overflow)

SRRT

Second RAN Route Assignment

SRTA

Set Route and Trunk Assignment

SRTO

Second RAN Route Time

STOT

System Totals report

TGAR

Trunk Group Access Restriction

TLDA

Calls Waiting Threshold

TLDB

Busy Threshold

TLDC

      Overflow Threshold

TLDD

      Time Overflow Threshold

TOF

      Time Overflow

TOFT

      Time Ovefflow Timer

TRC

      Malicious Call Trace key

TSF

      Telephone Service Factor

TSFT

      Telephone Service Factor Timer

TTD

      Telecommunications Terminal for the Deaf

TTY

      Teletypewriter

UNR

      Unrestricted Class of Service

vcc

      Voice Calling

VDT

      Video Display Terminal

VSID

      Value Added Server ID (VAS)

WATS

      Wide Area Telephone Service

SL-1
Automatic Call Distribution

Feature description

**northern
telecom**

SL-1

Automatic Call Distribution
ACD management commands and reports

Publication number: 553-2671-112
Product release: X1 1 release 19
Document release: 1 .0
Document status: Standard
Date: August 1, 1993

AtoZ KELLATRONICS, INC.

tel: 800.766.3425   fax: 800.720.1172
818.773.8888   818.773.8899

www.kellatronics.com   info@kellatronics.com

Revision history

August 1, 1993

Standard, release 1.0. This document includes all information from, and replaces the 553-267 1- 102 and 553-267 I ▪ 103. Changes for Xl 1 release 19 only are noted with revision bars in the margins.

Contents

List of figures

List of tables

Introduction

Automatic Call Distribution (ACD) distributes incoming calls to agent positions in the same ACD queue.

The ACD Load Management system lets customers adjust the ACD configuration to respond to changing traffic loads. The supervisor's digit display and the printed ACD Management Reports provide insights into the load situation.

Document overview

This document describes the ACD load management commands that supervisors can use to tailor the system to meet changing needs.

This document also describes the optional Management Report package, listing available management reports and providing the inputs for requesting reports. The ACD Management Reports feature provides the ACD customer with timely and accurate statistics relevant to the ACD operation so the customer can monitor changing ACD traffic loads and implement corrective action when required.
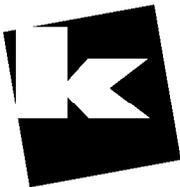
AtoZ KELLATRONICS, INC.

tel: 800.766.3425	fax: 800.720.1172
818.773.8888	818.773.8899
www.kellatronics.com	info@kellatronics.com

Operational   overview

Each ACD customer can designate one supervisor position as a Senior
Supervisor that is equipped with a Teletypewriter (TTY) or Video Display
Terminal (VDT) for Management Report functions or ACD Management
functions.

With the TTY or VDT, the senior supervisor can:

- — reassign auto-terminating ACD trunk routes
- — reassign ACD agent positions to other ACD   DNs
- — redefine the ACD Night Forwarding number
- — reassign an ACD agent position to another supervisor
- — assign priority or non priority status to ACD trunks
- — set the timers and routes for first and second Recorded Announcements (RAN)
- — specify a Night RAN route
- — set the Target answer time T used to calculate the Telephone Service Factor (TSF)
- — define the target queues for Automatic Overflow
- — define the Overflow thresholds
- — define the Interflow digits
- — allow 1200 agent positions per ACD DN on NT and XT machines
- — query the existing values for any of the above

Other documentation

For a complete description of the ACD system and features, refer to the
Automatic Call Distribution basic features description (553-2671-100). For
overlay and system message information, including error codes, refer to XI   *1
input/output guide (553-3001-400)*

For ACD error codes refer to *Xl I input/output guide* (553-3001-400)

Accessing the command mode

Before issuing load management or report commands, the senior supervisor must enter command mode by following these steps.

1 Type $ L from the senior supervisor's display

The system responds with a prompt **(>)** indicating that it is ready to receive further commands.

2 Enter new data on the same line as the prompt, and press the carriage return key

3 To query existing values, enter a ACD Management command.

4 Input new data if desired, or press carriage return if no change is necessary.

If there are any changes in a line, all data must be retyped.

5 To exit the ACD Management command mode, use the **$**L.

With the proper VDT or TTY equipment, supervisor can enter the ACD Management command mode to view existing parameters. The system prints the values but does not display the prompt or allow further input.

Management reporting commands

If the ACD has the ACD Management Reports feature, any current report display aborts when the $ L command is entered.

After the senior supervisor inputs a management reporting command, the system prints the current parameters associated with the command, followed by a double dash to indicate that the system is ready for input.

Selecting print options

The Select Print (SPRT) command lets the senior supervisor specify which management reports to print. The format for this command is:

SPRT   vwxy   VWXY

> *where:*
>
> v, w, x, and y are the reports to be printed:
>
> 1 for the Agent Group Report
>
> 2 for the Queue Report
>
> 3 for the Trunk Routes Report
>
> 4 for the Agent Position Report

Scheduling periodic reports

The Select Schedule (SSCH) command lets the senior supervisor define a schedule for periodic Management Reports. (LD23 also permits report scheduling.) The format for the command:

SSCH sd sm ed em   SD SM ED EM
shehs SHEHS
ddddddd   DDDDDD

where:

sd = the starting day (1-31)
ed = the ending day (1-31)
sm = the starting month (1-12)
em = the ending month (1-12)
sh = the starting hour (O-23)
eh = the ending hour (O-23)
S   = the schedule code

0   No reports are printed.

1   Reports are printed hourly on the hour.

2   Reports are printed every hour on the half-hour.

3   Reports are printed every half-hour.

4   Report 3 is printed every quarter-hour. No other reports are printed.

5   Report 3 is printed every quarter-hour.
Other reports may be printed hourly on the hour.

6   Report 3 is printed every quarter-hour.
Other reports may be printed hourly on the half-hour.

7   Report 3 is printed every quarter-hour.
Other reports may be printed every half-hour.

d = Days of the week when reports are to be printed.

1 = Sunday   5 = Thursday

2 = Monday   6 = Friday

3 = Tuesday   7 = Saturday

4 = Wednesday

Report Control

The ACD Report Control feature allows every ACD DN or control DN (CDN) to control report generation, including reports generated on the Meridian 1 (ACD-C) or by an auxiliary processor (ACD-D or ACD-MAX). Report Control only works with Meridian Mail SP8.

This feature eliminates the Virtual Agent Compatibility feature, introduced in Xl 1 release 12, which did not allow the messages to be sent to ACD-D or ACD-MAX systems for virtual ACD DNs. The three applications which use Virtual Agent ACD groups are:

- Integrated Voice Messaging System (IVMS)

- Data Services

- Meridian Mail

During conversion to Xl 1 release 17 from any earlier release, set RPRT to NO for the above ACD DNs. Virtual agent reporting is unavailable on ACD-D or ACD-MAX before Xl 1 release 4.

This option includes Package C reports, ACD-D reports, and ACD-MAX. For a complete discussion of ACD-D and ACD-MAX reporting, see the associated documents listed earlier in this section.

An example: Reports 1, 2, 4, and Daily Totals show 10 ACD DNs. If 2 ACD DNs have RPRT = NO, then the total ACD DNs in Reports 1, 2, 4, and Daily Total shows 8 ACD DNs instead of 10 ACD DNs.

Operating parameters

To generate a report for a particular ACD DN or CDN, configure the system for that particular report by setting the option ON. *Do not switch the reporting control on and off, as toggling between options generates inaccurate report information.* If the report status is to be changed, change the option at the end of a reporting period.

Management command conventions

— With DN Expansion (DNXP) equipped, ACD **DNs** can be up to seven, digits.

— ACD Position ID (POS ID) identifies an agent position.

— Access code **(ACOD)** and member number (MEM) identify trunk number routes.

— Queues are identified by ACD DN.

— When a CDN is specified for any of the management commands, the system outputs "**CDN**".

Enhanced ACD Routing

Enhanced ACD Routing (EAR) lets the system treat different calls differently, as described in *Automatic Call Distribution basic features description* **(553-2671-100).**

A Control DN (CDN) is a special Directory Number not associated with any physical telephone or equipment that specifies a destination ACD DN to which incoming calls are directed. Multiple CDNs can place calls into the same ACD queue. The parameters of the CDN, not those of the ACD queue, determine call treatment.

The following ACD Management commands are used for CDN default operation:

— FRRT   First RAN route

  FRTT   First RAN route time

— SRRT   Second RAN route

— SRTO   Second RAN route time option

The following commands are supported for a CDN.

- SRTA   Select Route Trunk Assignment. This is used to assign the terminating ACD DN for an auto-terminating ACD trunk. A CDN can be used as a valid auto-terminating ACD DN.

- IFDN   Interflow DN assignment. A CDN can be used as a valid Interflow DN of an ACD DN, but the CDN itself cannot have an Interflow DN.

- NITE   Night Forwarding number assignment. A CDN can be used as a valid Night Call Forward DN of an ACD DN, but the CDN itself cannot have a Night Call Forward DN.

- DTOT   Daily Totals. This presents a Daily Totals Report for CDNs based on a schedule block and not on a per CDN or ACD DN basis.

- STOT   System Totals. This presents a System Totals Report for CDNs based on a schedule block and not on a per CDN or ACD DN basis.

A new set of commands are added to support the CDNs on the system. A new print command is Print CDN Parameters and Options (PCPO). The new parameters for the PCPO command are listed below and covered more thoroughly in the PCPO section.

- DFDN   Local default ACD DN for the CDN

- CEIL   Call ceiling value for the CDN

When the senior supervisor enters the above commands for a CDN, the system appends the term "* * CDN * *" to the command in order to tag the entry as a CDN.

For example,

    FRRT 8976

appears as

    FRRT 8976 ** CDN **

Customer Controlled Routing (CCR)

Customer Controlled Routing (CCR) enables the customer to customize the treatment and routing of incoming calls through a user-friendly interface. Under normal circumstances, calls arriving at a CDN in the controlled mode have their handling determined by a customer-defined script executed by the CCRM application, rather than being handled by the X11 software. Refer to the documents listed at the beginning of this section for further information.

The following ACD Management commands are supported if CCR is equipped and the CCRM application is controlling to CDN:

- TLDA   Call Waiting threshold (CWTH)

- TLDB   Busy threshold (BYTH)

- TLDC   Overflow threshold (OVTH)

- TSFT   Telephone Service Factor (This allows the supervisor to change the threshold for calculating the TSF for the CDN.)

- CNTL   Set Controlled mode

CCR Management Reporting

The CCR feature affects customers with Management Reporting capabilities:

Report 1: Agent Group Report In the ACD-DN report for Report 1, the fields CALLS ANSWD and ASA are affected by the CCR feature only if the CCR calls are answered in the ACD queues, and the queues are responsible only for the time the calls spent in the queues.

Report 2: Queue Report Calls placed in more than one ACD queue to await an available agent are pegged against the ACD DN in which the call is answered. The wait time includes the time the call waited in the reporting ACD DN, not the accumulated time spent in all queues. For a CDN in Report 2, only three fields are used: CALLS ACCEPT, BUSY and DEFAULT DN.

Reports for ACD DNs   Multiple-queued calls do not affect the ACD queues statistics unless the calls were answered in the queues. The two fields added to the Queue Report for CCR are ROUTE TO and DISC.

Reports for CDNs — All fields described for CDNs apply to CCR.

Ongoing Status Display If the EAR feature has been implemented, CDNs are not included in the Ongoing Status Display. All calls coming into the CDN route to the default ACD DN immediately. If the CCR feature is used, the Ongoing Status Display reports both ACD DNs and CDNs for the customer. CDNs have values in the TSF, ASA, and the #CALLS IN QUEUE fields. All other fields contain asterisks indicating they do not apply to the CDN.

Agent ID option

This feature provides the ACD customer with the option of operating in either an Agent ID mode or Position ID mode. If the Agent ID option is selected, ACD agents must enter a four-digit Agent ID code (range 0001 to 9999) before access is allowed to ACD features. This is part of the ACD telephone log in procedure that must be performed before access to ACD features is allowed. Statistical performance data continues to be accumulated on a Position ID basis. However, the Agent ID code of the agent that used the particular agent position is reflected in the management reports.

ACD set log in

An agent's or supervisor's telephone cannot receive any ACD calls until an agent logs in to that telephone by pressing the In Calls key on the telephone. The system ignores the key if no headset or handset is connected.

- If the Agent-ID option is not defined, the LED associated with the NOT-READY key LED illuminates and the telephone digit display shows the ACD DN and supervisor position. The telephone is accumulating time and the agent can access all ACD features.

- A special dial tone appears if the Agent-ID option is defined The agent must key in the 4-digit Agent-ID code on the telephone dial pad. The system validates the digits and returns one of the following tones:

  - Overflow tone if the code is not input before normal digit time-out, or the code is invalid or out of range

  - Busy tone if another individual is already logged in with the same Agent-ID code.

  - A valid code gives the agent access to ACD features.

  Note: The configuration record specifies the maximum number of agents that can be logged in to the system at any one time (prompt MAGT in LD17). An agent who exceeds this threshold by trying to log in will receive an overflow tone.

500/2500 telephone log in protocols

Since the 500/2500 telephones do not have key lamps, the agent logs in and joins the idle agent queue by going off hook and entering the SPRE code plus 97. The agent can also log in by entering the SPRE code plus 97, then the four digit Agent ID number, and going off hook. To log out, the agent reenters the SPRE code plus 97, and goes on hook.

A special logged-in tone lets the agent know when the telephone is in the agent queue. Before logging on and after logging out the agent hears the normal dial tone.

The log in and log out commands clear the Not Ready mode. If the agent is not logged in, the Not Ready mode cannot be activated.

Data Agent log in

Data Agents can press the Make Set Busy (MSB) key to log in after ascertaining that the Data Shift key is lit on the Add-on Data Module (ADM) associated with that agent position. The correct Class Of Service (COS) must be defined for this feature in LD11.

ACD telephone log out

Before logging out, the agent should check to see if any calls are active or on hold (see "Walkaway/Return" on page 12).

Removing the headset/handset from a telephone that is currently logged in to the ACD operation terminates access for agents who have the option of using headset/handset removals or activating the Make Set Busy key. Agents who do not have this option can log out using the Make Set Busy key, unless this key is unavailable. Pressing Make Set Busy causes immediate logout unless there is an active call on the In Call key, in which case logout occurs when the call is disconnected.

After an agent logs out:

- The agent position is removed from the ACD agent queue.

- Beginning with X11 release 19 for ACD packages C and D, systems with a display show a **LOGGED OUT** message if the Make Set Busy key has been deactivated.

- All timing for that position stops.

Data Agent log out

Data Agents can press the Make Set Busy (MSB) key to log out after ascertaining that the Data Shift key is lit on the Add-on Data Module (ADM) associated with that agent position. The correct Class Of Service (COS) must be defined for this feature in LD11.

Walkaway/Return

An agent who is logged in can briefly leave the position, then return and resume normal operation without logging in again. (If the agent disconnects by merely unplugging the headset or handset from the telephone, the Walkway/Return feature is not activated.)

Removing the headset/handset under any condition other than those listed below logs out the agent. These are the **Walkaway** procedures:

- **Direct Call-Processing (DCP) phase (In Calls LED lit)** During this operation, the agent is connected with a caller. Before removing the headset/handset, the agent presses the Hold key, causing the In Calls LED to flash at 120 IBM and initiating Walkaway.

- **Post Call-Processing (PCP) phase (NOT READY LED lit)** During this operation, the agent and the caller are disconnected. When the agent presses the Hold key, the Not Ready LED flashes at 120 ipm. Removal of the headset/handset initiates Walkaway.

- **Non-ACD call-handling phase (DN LED lit)** A non-ACD call is connected to the agent position. The agent presses the Hold key to keep the call connection, and the DN LED flashes at 120 ipm, permitting Walkaway.

Timing continues during Walkaway, accumulating in the category that was active prior to Walkaway.

If the supervisor has corresponding agent keys, they flash 120 ipm for Walkaway.

- No lamp for MSB
- Steady lamp for Busy on In-Calls
- Slow flash for waiting for a call
- Fast flash for DN calls

    Note: If the incoming caller disconnects from an on hold In Calls or DN key, the telephone reverts automatically to the Not Ready state and the Not Ready LED flashes. The timing for the prior state stops, and PCP timing starts.

When an agent or supervisor returns to an agent position which is in the **Walkaway** mode and plug the headset/handset into the telephone, normal operation of ACD features resumes.

Agents using DN keys

Activating any DN key lights the associated LED indicator lamp and gives
dial tone. An incoming call to that DN causes the LED indicator to flash and
the agent telephone to ring. This assumes that any and all agents on a queue
basis are permitted to use DN keys, or the agent is already logged in. If the
agent is not permitted to use DN keys when not logged in, the LED for
incoming DN calls flashes. However, the agent is not able to answer the calls
until logged in to the queue.

Alternate Call Answer

The Alternate Call Answer feature allows the customer to choose, on a per
queue basis, if ACD calls should be blocked for an agent set with an IDN call
on hold. For complete information, **see Automatic Call** *Distribution basic
features description* **(553-2671-100).**

In Report 1, if an agent answers an ACD call while an IDN call is on hold, the
time for the ACD call shows as AVG DCP instead of AVG TIME.

In Report 4, if an agent answers an ACD call while the IDN call is on hold,
the time for the ACD call shows as AVG DCP instead of INC TIME or OUT
TIME.

Load management commands

This section describes the commands that a senior supervisor can execute to manage and manipulate system traffic. Refer to "Accessing the command mode" on page 3 for information on using the command system.

Set Controlled mode (CNTL)

The CNTL command operates only if CCR is equipped. The CNTL command determines if the selected CDN is in controlled mode. The CDN operates in the controlled mode when the value is ON.

The command format is:

CNTL CDN -- <Existing mode > -- MODE

Legend:

CDN   =   The Directory Number of the CDN

MODE   =   ON for controlled mode and OFF for default mode

An error is output on the supervisor's terminal when a non-CDN is specified for the CDN field or a mode key word other than ON or OFF is given.

Note: For EAR, the CNTL option is always OFF; this restricts the CDN to using default treatment for EAR only.

Set Default ACD DN (DFDN)

The DFDN command sets the Default ACD DN for a CDN to operate in the default mode. This DN is the primary target for CDN calls receiving default treatment. This ACD DN must be local. The ACD DN defined for data service access cannot be used as a default ACD DN.

The command format is:

DFDN CDN -- <Existing DFDN **>** -- ACD DN

Legend:

DFDN CDN   = Set the default ACD DN for this CDN

<Existing **DFDN>** = Output by the system, the current DFDN

ACD DN   = The new default ACD DN to be entered

Query current options (P-OPT)

The command POPT enables supervisors and the senior supervisor to determine the current options that are in effect for each ACD DN. For each ACD DN specified, the following information is given:

FRRT = First RAN Route Number

FR'M = First RAN Route Time

SRRT = Second RAN Route Number

SRTO = Second RAN Route Time

MURT = Music Route

FORC = Whether or not Call Forcing is in effect

FCFT = Flexible Call Force timer

OBTN = Whether or not Observation Tone is given to an agent when being observed by a supervisor

SPCP = Whether or not the Separate Post Call-Processing option is in effect

NRRT = Night RAN Route

NITE = Night Forwarding Number if defined

The format for this command is as follows:

POPT xxxx xxxx xxxx

Legend:

xxxx = an ACD DN up to seven digits. "ALL" may be entered here to see the options applicable to *all* ACD DNs in the customer's operation.

Query current parameters (PPAR)

The command PPAR enables the senior supervisor or supervisors to query the current parameters associated with each ACD DN. For each ACD DN specified, the following information is given:

MAXP	=	Maximum number of Positions assigned
TSFT	=	Telephone Service Factor Time, in seconds
TLDA	=	Calls Waiting Threshold
TLDB	=	Busy Threshold
TLDC	=	Overflow Threshold
TLDD	=	Time Overflow Threshold
SQ01	=	First Overflow Target queue
SQ02	=	Second Overflow Target queue
SQ03	=	Third Overflow Target queue
IFDN	=	Interflow number

The format for this command is as follows:

PPAR xxxx xxxx xxxx

Legend:

xxxx = an ACD DN up to seven digits. ALL may be input to see the values in effect for all ACD DNs in the customer's operation.

Select Route and Trunk Assignment (SRTA)

The Select Route and Trunk Assignment (SRTA) command assigns the terminating ACD DN for an auto-terminating ACD trunk. A CDN can be used as a valid auto-terminating ACD DN.

Changing the terminating ACD DN for a trunk affects only those calls that seize the trunk after the ACD DN is changed. The input format for this command is below:

SRTA RAC MEM xxxx   x x x x

Legend:

RAC   = Route Access Code up to seven digits with DNXP

M E M = Trunk Member number (1-126)

xxxx   = current ACD DN /CDN where the trunk is assigned

XXXX   = new ACD DN/CDN (up to seven digits with DNXP)

Select trunk Priority Assignment (SPRI)

The senior supervisor can assign individual ACD trunks to priority or non priority status with the following command:

SPRI RAC MEM x X

Legend:

RAC   = Trunk Route Access Code

M E M = Trunk Route Member number (1-126)

x   = Current priority assignment (0 or 1)

X   = New priority assignment (0 or 1)

Note: 0 equals no priority. 1 equals priority.

Select Agent Position Assignment (SAPA)

The Select Agent Position Assignment **(SAPA)** command changes an individual agent's ACD DN queue assignment. The agent must enter the Make Set Busy (MSB) mode before the new assignment becomes effective.

The transfer will not occur (an error message is output) if there is no room in the ACD position list at the time of execution.

More than one **SAPA** command can be outstanding at any one time, but only the final command is effective.

The format for this command is as follows:

SAPA XXXX yyyy YYYY

Legend:

x x x x = applicable Agent Position-ID

YYYY   = the ACD DN to which the position is currently assigned

YYYY = the new ACD DN assignment

Note *1*: Supervisors within the ACD Package D environment must not confuse Virtual Agent position functions with Actual Agent position operations. Please refer to the ACD-D documents for details.

Note 2: With ACD Package D the agent does not have to be in MSB mode to be assigned to another queue as the agent does for ACD Package C. If the ACD Package D agent has a ringing call coming from the Time Overflow (TOF) queue while being moved, then that ringing call is returned to the front of the TOF queue where it originated.

Note* 3**: When Report Control is active, it is possible that agent moves will not be reported for one or another queue. Refer to ***Automatic Call Distribution basic features description (553-2671-100) for a complete discussion.

Select Agent to Supervisor Assignment (SATS)

The Select Agent to Supervisor Assignment command (SATS) allows the senior supervisor to reassign an agent position from the Agent key on one supervisor position to an Agent key on another supervisor position. AGENT keys are assigned through the LD11. This command cannot operate on CDN queues.

The format for this command:

SATS XXXX yyyy zz YYYY ZZ

Legend:

XXXX	=	Position ID for the agent to be reassigned
YYYY	=	the supervisor Position ID where the agent position is currently assigned
zz	=	the Agent key on the supervisor's telephone where the agent position is currently assigned
YYYY	=	the new supervisor Position ID (see Note 1)
z z	=	the Agent key on the new supervisor's telephone.

Specifying X for the new supervisor Position ID removes the agent from the current supervisor without assigning a new supervisor.

A supervisor who lacks telephone Agent keys must press a carriage return instead of a key number when using SATS to assign an agent to a supervisor.

First RAN Route Assignment (FRRT)

The First RAN Route Assignment (FRRT) command specifies (for each ACD DN) the trunk route access code for the first Recorded Announcement (RAN). If a CDN is the command target, **"**CDN**"** appears on the command line. For example, if 8976 is a CDN: FRRT 8976 **CDN**.

The format for this command:

FRRT XXXX yyyy YYYY

Legend:

XXXX	=	Applicable ACD DN/CDN up to seven digits with DNXP. If EAR is equipped, then XXXX can be a CDN.
YYYY	=	Current first RAN route access code
YYYY	=	New first RAN route access code of up to four digits

Specifying X for the new RAN route access code removes the first RAN feature from the ACD DN.

First RAN Route Time (FRTT)

The First RAN Route Time (FRTT) indicates how many seconds an incoming ACD call can remain unanswered before receiving first RAN. If a CDN is specified as the command target, the command outputs **"**CDN**"** on the command line. For example, if 8976 is a CDN: FRTT 8976 **CDN**.

The format for this command:

FRTT XXXX yyyy YYYY

Legend:

XXXX = Applicable ACD DN/CDN (up to seven digits with DNXP). If EAR is equipped, then XXXX can be a CDN.

yyyy = Current first RAN time

YYYY = New first RAN time in seconds (o-2044)

Second RAN Route Assignment (SRRT)

The Second RAN Route Assignment (SRRT) command specifies the trunk route access code for the second RAN for each ACD DN. If the target of the command is a CDN, the output **"* *CDN* *"** appears on the command line. For example, if 8976 is a CDN: SRRT 8976 **CDN**.

The format for this command:

SRRT XXXX yyyy YYYY

Legend:

XXXX = Applicable ACD DN/CDN up to seven digits with DNXP. If EAR is equipped, then XXXX can be a CDN.

yyyy = Current Second RAN route access code

YYYY = New second RAN route access code (see Note)

Note: Specifying X for the second RAN route access code removes the second RAN feature from the ACD DN.

Second RAN Route Time (SRTO)

The Second RAN Route Time (SRTO) command indicates how many seconds should elapse between first and second RAN. If the command target is a CDN, the output **"**CDN**"** appears on the command line. For example, if 8976 is a CDN: SRTO 8976 **CDN**.

The command format is:

SRTO XXXX yyyy YYYY

Legend:

XXXX   = Applicable ACD DN/CDN up to seven digits with DNXP.
                If EAR is equipped, then XXXX can be a CDN.

YYYY   = Current Second RAN time

YYYY   = New second RAN time in seconds (o-2044)

Night RAN Route Assignment (NRRT)

The Night RAN Route Assignment (NRRT) command specifies the trunk route access code for the night RAN. The format for this command:

NRRT XXXX yyyy WYY

Legend:

XXXX   = Applicable ACD DN up to seven digits

YYYY   = Current night RAN access code

YYYY   = New night RAN access code up to four digits (see Note)

Note: Specifying X for the Night RAN access code disables Night Forwarding for the ACD DN.

Night Forwarding number assignment (NITE)

The NITE command designates a forwarding number, up to 23 digits, to use when the ACD is in Night Service, or when all ACD telephones are in the Make Set Busy mode. A CDN cannot have Night Service; it defaults to the default ACD DN. The format:

NITE XXXX yyy ... y   YYY ... Y

Legend:

x x x x   = Applicable ACD DN (up to seven digits with DNXP)

YYY ... Y = Current Night Forward number

YYY ... Y = The new Night Forward number up to 23 digits including the asterisk (*) to indicate dialing pause where required

If EAR is equipped then:

XXXX   = Applicable ACD DN and it can not be a CDN.

yyy...y = It can be a CDN

YYY...Y = It can be a CDN.

Note I: Specifying X for the Night Forward number disables Night Forwarding for the ACD DN.

Note 2: The ASA field is upgraded when the next report is updated. The ASA field is not updated when the ACD queue goes into night service or during the 30 second display of ongoing status.

Automatic Overflow Target DN

The following commands define or change up to three target ACD DNs for the Automatic Ovefflow feature. The formats of the commands are below:

SQ01 WWWW xxxx XXXX

SQ02 WWWW yyyy **YYYY**

SQ03 WWWW zzzz   ZZZZ

Legend:

WWWW = ACD DN for the Source queue up to seven digits

xxxx   =   Current first Target ACD DN

x x x x   = New first Target ACD DN

YYYY   = Current second Target ACD DN

YYYY   = New second Target ACD DN

zzzz   = Current third Target ACD DN

z z z z   = New third Target ACD DN

Note: Specifying X for a new target ACD DN deletes it, replacing it with the next choice, if applicable. For instance, if X is specified for the target ACD DN for SQ02, the target ACD DN specified for SQ03 becomes the SQ02 target ACD DN.

Automatic Overflow Target DN

The following commands define or change up to three target ACD DN for the Automatic Overflow feature. The formats of the commands:

SQ01 WWWW xxxx XXXX

SQ02 WWWW yyyy **YYYY**

S Q 03 WWWW **zzzz** ZZZZ

Legend:

WWWW = ACD DN for the Source queue up to seven digits

xxxx   = Current first Target ACD DN

x x x x   = New first Target ACD DN

YYYY   = Current second Target ACD DN

YYYY   = New second Target ACD DN

zzzz   = Current third Target ACD DN

z z z z   = New third Target ACD DN

Note: Specifying X for a new target ACD DN deletes it, replacing it with the next choice, if applicable. For instance, if X is specified for the target ACD DN for SQ02, the target ACD DN specified for SQ03 becomes the SQ02 target ACD DN.

Automatic Overflow thresholds (TLDA, TLDB, TLDC)

The TLDA, TLDB, and TLDC commands allow adjustments to Calls
Waiting (CWTH), Busy (BYTH), and Overflow (OVTH) thresholds
respectively.

- Specifying X as the new threshold for TLDA reduces the threshold to
  one, thus the Calls Waiting lamp lights when any call is waiting.

- Specifying X as the new threshold for TLDB reduces the threshold to 0,
  preventing acceptance of any calls overflowed from another ACD DN.

- Specifying X as the new threshold for TLDC increases the threshold to
  its maximum value (2047) and prevents any calls from overflowing out
  of the ACD DN.

- If CCR is equipped and the CDN is in the controlled mode, the CDN is
  also supported by the TLDA, TLDB, and TLDC commands.

The Ovefflow threshold command formats:

TLDA XXXX yyyy   YYYY

TLDB XXXX yyyy YYYY

TLDC XXXX yyyy YYYY

Legend:

XXXX   = Applicable ACD DN (up to seven digits with DNXP)

YYYY   = Current threshold value

YYYY   = New threshold value (o-2044)

Time Overflow threshold- (TLDD)

The TLDD command allows the supervisor to set, change or clear the Time Overflow Timer (TOFT, introduced in X11 release 10) for an ACD DN.

The Time Overflow threshold command format:

TLDD XXXX NONE   YYYY (the TOFT value can lo-1800 seconds prior toX11 release 18 or 2-1800 seconds with Xl 1 release 18 and later)

TLDD XXXX yyyy   YYYY (change TOFT value)

TLDD XXXX YYYY   X (delete TOFT value)

Legend:

XXXX = ACD DN

NONE   = TOFT is undefined; calls do not overflow for this DN

YYYY   = Current threshold timer

YYYY = New threshold timer

After the Time Overflow Timer (TOFT) has been defined, the target ACD DNs of this ACD DN can answer ACD DNs calls. If one of the target ACD DNs is already answering the maximum six source queues, an error message appears showing the affected target ACD DN (ACD103). The supervisor must remove the affected target ACD DN from one of the source ACD DNs before defining the TLDD value.

Setting the Interflow DN (IFDN)

This command indicates, for each ACD DN, the destination DN for ACD calls when the Interflow feature is active. The command format:

IFDN XXXX yyy . . . y   YYY . . . Y

Legend:

x x x x   = Applicable ACD DN, up to seven digits if DNXP.

YYY ... Y   = current Interflow DN/ACD can be any Interflow DN

YYY . . . Y = New Interflow DN up to 23 digits including the asterisk (*) to indicate a dialing pause (see Note)

If equipped with EAR is equipped, then:

x x x x   = Applicable ACD DN and it cannot be a CDN.

YYYY and YYYY   = can be a CDN.

Note: Specifying X for the new Interflow DN disables the Interflow feature for the ACD DN even though an Interflow key might be assigned to a supervisor position.

Telephone Service Factor time (TSF)

This command sets or change the value of **T** (in seconds) for the Telephone Service Factor (TSF). The command format:

TSFT XXXX yyy YYY

Legend:

XXXX   **=** Applicable ACD DN up to four digits (seven if DN expansion is equipped)

YYYY   = Current value of **T**

YYY   = New value of **T** in seconds (l-510)

Set Agent Priority (SAGP)

The Priority Agent feature allows ACD agents to handle calls based on system defined priorities for each ACD DN or ACD DN group. The Priority Agents package (116) must be implemented.

The SAGP command (Set Agent Priority) allows the manager to set and change an agent's priority to receive calls based on the Agent's Position ID (POS-ID).

If the Agent's POS-ID is not defined, an error code appears. The command format:

SAGP ZZZZ pp PP

Legend:

ZZZZ = POS-ID

PP   = Old Priority set

PP   = New Priority set

Note: The range for Agent Priorities is between 1 - 48 for NT, XT or System options 51, 61, or 71 and between 1 - 32 for all other machine types.

Customers with ACD Package D software should refer to the Package D documents listed in the front of this document.

List Agent Position Assignment (LAPA)

This command changes the ACD DN for up to 10 agents at a time. The format to assign the ACD DNs:

LAPA XXXX YYYY YYYY yyyy... YYYY

Legend:

XXXX = ACD DN; up to seven digits if DNXP.

YYYY   = agent position ID (limit to 10)

Note: Both LAPA and LAGP commands can only be executed with the ACD-D package.

List Agent Priority (LAGP)

The Priority Agent feature allows ACD Agents to handle calls based on system defined priorities by an individual ACD DN or a group of ACD DNs. The Priority Agents package (package 116) must be implemented.

The LAGP (List Agent Priority) command defines Priority Agent Groups, allowing up to ten agents in the same Priority Agent Group.

The LAGP command sets and changes a Priority Agent Group's priority and member list based on Position ID (POS-ID). The command format to change a priority or group list:

> LAGP   pp XXXX XXXX XXXX . . . XXXX

Legend:

PP   = Priority for the Group.

XXXX   = Agent POS-IDs for group members (up to 10).

Note: The range for Agent Priorities is between 1 - 48 for NT, XT, 71, or 8lmachine types and 1 - 32 for all other machine types.

Customers with ACD Package D software should refer to the Package D documents listed in the front of this document.

Enable Call Force

Call Force automatically connects a call with an idle agent and determines the time delay (default two seconds) between call disconnection and placement in the idle agent queue. (See following section,"Enable Flexible Call Force" on page 34.) ACD Package B must be installed and implemented.

The FORC command enables or disables the Call Force feature. To **enable** the Call Force feature:

FORC XXXXXXX no YES

Legend:

XXXXXXX = the applicable ACD DN (up to 7 digits)

n o   = output by the system meaning Call Force is currently disabled

YES   = input by the user to indicate enable Call Force

Note: If a Carriage Return is entered, the feature remains **disabled.**

To **disable** the Call Force feature:

FORC XXXXXXX yes NO

Legend:

XXXXXXX = the applicable ACD DN (up to 7 digits)

yes   = output by the system indicating Call Force is enabled

NO   = input by the user to disable Call Force

Note: If a Carriage Return is entered, the feature remains **enabled.**

Enable Flexible Call Force

Beginning with Xl 1 release 16, Flexible Call Force allows a time delay between 0 and 30 seconds. (See "Enable Call Force" on page 33.) ACD Package B must be enabled to implement the FCFT command.

The FCFT command:.

FCFT XXXXXXX nn NN

Legend:

XXXXXXX = the applicable ACD DN (up to 7 digits)

n n   = output by the system indicating the current delay time

NN   = input by the user to enter a new delay time

Note: If a Carriage Return is entered, the current time does not change.

Print CDN Parameters and Options (PCPO)

The PCPO command prints parameters and options for the configured   CDNs using this command.

PCPO CDN CDN , . . .CDN
　　　o r
PCPO ALL

Legend:

CDN   = the CDN Directory Number to be displayed

ALL   = all CDN Directory Numbers in the system

The format for this printout from the PCPO command is shown in Table 1.

Table 1
PCPO printout format

CDN	CNTL	DFDN	CEIL	FRRT	FRTT	SRRT	SRTO	MURT	TLDA	TLDB	TLDC	TSFT
8976	YES	8900	20	3	1 0	6	1 6	1 5	1	0	*2047*	*20*

The definitions and-sizes of the fields are:

CDN   = CDN Directory Number, up to seven digits

CNTL = CDN in Controlled or Default mode
          (Yes = Controlled mode,   No = default mode)

DFDN = Default ACD DN (Must be a local ACD DN), up to seven
            digits

CEIL   = Call ceiling value, up to four digits

FRRT   = First RAN route, up to four digits

FRTT   = First RAN route time, up to four digits

SRRT   = Second RAN route, up to four digits

SRTO   = Second RAN route Time option, up to four digits

MURT = Music route, up to four digits

TLDA = Calls Waiting threshold, up to four digits

TLDB   = Busy threshold, up to four digits

TLDC   = Overflow threshold, up to four digits

TSFT   = Telephone Service Factor, up to four digits

Set the Call Ceiling (CEIL)

The CEIL command sets a the CDN call ceiling value.

The command format:

CEIL CDN --<Existing Ceiling value7 -- CV

Legend:

CEIL CDN   = Set the ceiling value for this CDN

<Existing Ceiling value7 = output by the system, current call ceiling

c v   = the new ceiling value to be entered
                                (o-2047)

Display Routing Tables (DSPL)

Use the DSPL command with Enhanced Overflow reviews queue Routing Tables.

The command format:

DSPL (ACD queue numbers)

or

DSPL ALL

displays all queue Routing Tables in the ACD system, including the following information:

Entry	Entry number, from 1 to 20
Target ID	Overflow DN
Timer	Threshold value (in seconds) of this entry
Status	Queue status, active or inactive (blank)
Registered	Success of last queue request, OK or blank

Management reporting

ACD supervisors and senior supervisors can use the optional Management Reporting package to receive four management reports that describe agent, queue, and trunk activity. This section of the document describes those reports, their fields, and other management reporting options available to supervisors.

Obtaining supervisor reports

An ACD supervisor can view statistical data using a terminal or teletypewriter from an ACD supervisor position. The terminal must be EIA RS-232-C compatible, and support the standard ASCII character set. The ACD supervisor display reflects the status of ACD queues and is updated every 30 or 60 seconds (specified through a service change). The supervisor can query schedules and printing options in addition to viewing the ACD information.

One senior supervisor position per customer has the ability to define and change report printing schedules and options. The periodic report schedules and options can also be defined through service change LD23.

Periodic management reports can be scheduled for regular output on the hour, on the half-hour, or less frequently. As of X 11 release 3, report 3 is updated every fifteen minutes. The four periodic management reports (REPT) contain statistics accumulated since the previous printing.

The four reports:

- REPT 1   Agent Group Report
- REPT 2   Queue Report (CDN)
- REPT 3   Trunk Routes Report (RAN)
- REPT 4   Agent Position Report

See "Accessing the command mode" on page 3.

Report Control

Report control, available beginning with X11 release 18, allows every ACD DN or CDN to customize report generation. The decision to generate reports occurs at the system level, where the report option is set to ON or OFF. The following features apply to report control.

Control Directory Numbers Control Directory Numbers (CDNs) are special DNs to be used with the Enhanced ACD Routing (EAR)) feature. ACD Report Control applies both to CDNs and ACD DNs. Reporting on CDNs is not available on ACD-D or ACD-MAX until Release 4.

Enhanced Overflow Both the source and target DNs must have the option turned on for accurate reports. For example, the source ACD DN has the option turned OFF and the target ACD DN has the option turned ON. When a call overflows by count and is answered by the target DN, that call is pegged for the target DN but not for the source DN. For accurate reports, source and target ACD DNs should both be ON. In order to use Enhanced Overflow with ACD-MAX, NACD is required on MAX. It is not possible to use enhanced ACD with ACD-D.

Network ACD When calling across a network, both the local and remote ACD DNs must have the option turned on for reports to be balanced.

Overflow by count The source and target DNs must have the option turned on for accurate reports. For example, the source ACD DN has the option turned off and the target ACD DN has the option turned on. When an overflowed call is answered by the target DN, that call is pegged for the target DN as answered but not for the source DN, resulting in an inaccurate report.

Report commands If the Daily Total report (DTOT) command or System Total report (STOT) commands is issued for a queue that has the option disabled, reports are not generated for these queues.

Time Overflow Both the source and target DNs must have the option turned on for accurate reports. For example, the source ACD DN has the option turned off and the target ACD DN has the option turned on. When a Time Overflowed (TOF) call is answered by the target DN, that call is pegged for the target DN as answered but not for the source DN.

The Report Control feature affects the following reports:

— **Report 1 (ACD DN report)** When RPRT is yes for the specified ACD DN, this report is printed.

— **Report 2 (ACD queue report)** When RPRT is yes for the specified ACD queue, this report is printed. For CDN reporting, RPRT is yes for CDNs.

— **Report 3 (trunk report)** This report is not affected by the RPRT option. RPRT for CDN produces RAN reports for CDNs.

— **Report 4 (Agent report)** When RPRT is yes for the specified ACD DN, any agent activity, while belonging to this ACD DN, is printed.

— **Daily Total report** The RPRT option must be yes at the end of the reporting period for a report to be printed. If RPRT is YES for part of the reporting period, but is turned no for the rest of it, a report is not printed. If the option is no for part of the period, then turned yes at the end of the reporting period, a report for the full day is printed.

— **Ongoing Status** If RPRT is no, ongoing status reports are not printed.

Short report The short report is affected by the RPRT option. Several conditions are possible for the report to print or not to print. These options are outlined below: For example, Agent 1 is logged on to ACD DN 5512, then moves to ACD DN 5579. The report feature does not follow the agent, but is controlled **by** the DN. Table 2 shows a report example:

Table 2
Report Control Settings

ACD DN 5512 report control set to:	ACD DN 5579 report control set to:	Report printed for agent
YES	YES	YES
YES	NO	YES
NO	YES	YES
NO	NO	NO

Warning   messages

Each printed periodic report (Figures 1 through 7) contains a heading (ACD customer number, date, time), and warning messages (if any), followed by the reports that have been specified. One or more of the following warning messages may appear after the report heading:

SCHED CHG (Schedule Change) This message prints if the periodic reporting schedule has changed (by the senior supervisor or by service change) since **the** last reporting period.

INIT (Initialize) This message prints if an initialization has occurred since the last reporting period. The periodic reports do not print as the initialization erased all data. The accumulation areas are cleared to ensure accurate statistics for the next reporting period.

PER GT HR (Period Greater Than one Hour) This message prints if the time since the last reporting period exceeds one hour. For example, if the reporting schedule is set from 0800 to 1600 daily, the 0800 report carries this warning message. This message indicates that data in some of the reported fields may be misleading. For example, the Average Agents Available (AVG AGTS) field is calculated assuming a maximum interval of 60 minutes. Similarly, other fields which involve the elapsed time may have overflowed and are reported inaccurately. Three fields are affected:

- **AVG BUSY (Average Busy)** The average time an agent position is busy on a call.

- **AVG MANNED (Average Manned)** The average time an agent position is in Not Ready (NRD) state.

- **INC CCS (Incoming Centi Call Seconds)** The number of CCS (Centi Call Seconds) used. See Report 3, Trunk Routes.

Note: If the calculation of a field requires division and the resulting number is greater than five digits, four asterisks (* * * *) print instead. This also occurs when the calculation requires division by zero. Fields that are not applicable for that category have dots in the line entry.

Report data

This document includes sample management report. These reports are examples only: your actual reports will contain different data.

Tables 3 through 8 provide a description of the data contained in each field of the Agent Group Report (REPT 1), Queue Report (REPT 2), Trunk Route Report (REPT 3), and Agent Position Report (REPT 4), respectively, as shown in Figures 1 through 7.

Data shown in the Calls Accepted field is based on the following:

— If a call is night forwarded, it is counted in the interflow field for the source ACD DN in the queue report.

— If the night forwarded number is an ACD DN, then calls accepted, answered, abandoned, etc., are reflected in the count for the terminating ACD DN. The call is *not* counted as call accepted against the source ACD DN.

— If a call is not night forwarded (whether or not night RAN is given), it counts as a call accepted, answered, etc., against the source ACD DN. It will not count under the intefflow field in this case.

— If the Time Overflow (TOF) feature is used, the calls accepted value includes answered time overflow calls from another queue. Calls to this ACD DN which are answered by another queue (by time overflow) are not counted.

IVR queues are reported separately in Reports 1, 2, 4, and the Daily Totals Report. The IVR reports do not balance as other reports do.

Fields that are not applicable for a category have dots in the line entry.

If a report is wider than 80 columns, it truncates on an 80 character printer. Reports wrap around on printers that can autowrap.

The following figures show what typical reports look like. These show averages. A Total option shows totals instead of averages.

Figure 1
Periodic management report format (X11 release 9)

```
ACD  001            1899 02 01
```

REPT 1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	AVG TIME POSN	
										BUSY	MANNED
8901	0	7	****	4	16	20	73	0	****	136	646
8902	0	4	†	27	0	27	134	0	****	110	646
8903	0	†	14	2	398	400	246	0	****	400	646
3		12	4	11	42	54	107	0	****	216	646

REPT 2

ACD DN	CALLS ACCPTD	RECALL TO SRCE	ANSWRED LONGEST WT. TIME	ABNDONED No	AVG. WT	TSF	OVER FLOW	INTER FLOW	DELAY ANN 1ST	2ND	CWTH	BVTH	OVTH
8901	3	3	0	0	****	100	0	0	0	0	2	2	4
8902	4	0	2	0	****	100	0	0	0	0	2	2	4
8903	14	0	14	6	13	100	3	0	5	†	3	2	4
3	21	3	16	6	13	100	3	0	5	†	7	6	12

REPT 3

ROUTE CODE	NO. OF TRUNKS ASSN	WORK	HPR	INC CALLS	INC CCS	OUT CALLS	OUT CCS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T
DID-721	2	†	0	2654	0	0	0	2	0	0	3
TIE-728	†	†	2	123	2	2	†	0	2	3	2
2	3	2	2	2777	2	2	1	2	2	3	5

REPT 4

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	BUSY TIME	MANNED TIME	Q/AGT ID
ACD DN 8901											
30	7	4	16	73	0	0	0	0	138	646	4545
ACD DN 8902											
19	4	27	0	134	0	0	0	0	110	646	2222
ACD DN 8903											
44	1	2	398	246	0	0	0	0	400	646	1313

Figure 2
Periodic management report format (XI 1 release 10)

ACD 001   1899 02 01

REPT 1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	AVG TIME POSN	
										BUSY	MANNED
8901	0	7	****	4	16	20	73	0	****	138	646
8902	0	4	1	27	0	27	134	0	****	110	646
8903	0	1	14	2	398	400	246	0	****	400	646
3		12	4	11	42	54	107	0	****	216	646

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABNDONED No	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW	DELAY ANN 1ST	2ND
8901	3	3	0	0	****	100	7	0	0	0	0	0
8902	4	0	2	0	****	100	0	0	0	0	0	0
8903	14	0	14	6	13	100	0	7	3	0	5	1
3	21	3	16	6	13	100	7	7	3	0	5	1

REPT 3

ROUTE CODE	NO. OF TRUNKS ASSN	WORK	HPR	INC CALLS	INC CCS	OUT CALLS	OUT CCS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T
DID-721	2	1	0	2654	0	0	0	2	0	0	3
TIE-728	1	1	2	123	2	2	1	0	2	3	2
2	3	2	2	2777	2	2	1	2	2	3	5

REPT 4

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	BUSY TIME	MANNED TIME	Q/AGT ID
ACD DN 8901											
32	7	4	16	73	0	0	0	0	138	646	4545
ACD DN 8902											
20	4	27	0	134	0	0	0	0	110	646	2222
ACD DN 8903											
45	1	2	398	246	0	0	0	0	400	646	1313

Figure 3
Periodic management report format (XI 1 release 12) (Part 1 of 2)

ACD 001   1899 02 01

REPT 1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	#XFER IDN	#XFER ACD	AVG TIME POSN BUSY	MANNED
8901	0	7	-	4	16	20	73	0	****	1234	34	138	646
8902	0	4	1	27	0	27	134	0	****	32	198	110	646
8903	0	!	14	2	398	400	246	0	****	12	16	400	646
3		12	4	11	42	54	107	0	****	1278	248	218	646

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABNDONED No	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW	DELAY ANN 1ST	2ND
8901	3	3	0	0	****	100	7	0	0	0	0	0
8902	4	0	2	0	****	100	0	0	0	0	0	0
8903	14	0	14	6	13	100	0	7	3	0	5	1
3	21	3	16	6	13	100	7	7	3	0	5	1

REPT 3

ROUTE CODE	NO. OF	TRK	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	ABANDONED AFT-T	ANSWERED BEF-T	ANSWERED AFT-T	PEG	ALLTRK BUSY TOTAL	LONG
DID-721	!	0	2654	0	0	2	0	85	10	3	10	6
TIE-728	!	2	123	2	2	0	2	219	10	2	8	5
2	1	2	2777	2	2	2	2	304	20	5	0	0

INTERFLOW ROUTES

ROUTE CODE	NO. OF TRK	INC CALLS	INC CCS	OUT CALLS					PEG	ALLTRK BUSY TOTAL	LONG
TIE-726	16	0	60	4	10	"""""""""""""""""""""""""""""""""""			!	3	3
TIE-733	20	0	30	2	28	'''				0	0	0
2	36	0	90	6	39	....	....	....	!	0	0

Figure 3
Periodic management report format (X1 1 release 12) (Part 2 of 2)

POS ID	CALLS ANSWD	AVG DC?	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFER IDN	ACD	BUSY TIME	MANNED TIME	Q/AGT ID
REPT 4													
ACD DN 8901													
32	7	4	16	73	0	0	0	0	1234	34	138	646	4545
ACD DN 8902													
20	4	27	0	134	0	0	0	0	32	198	110	646	2222
ACD DN 8903													
45	1	2	398	246	0	0	0	0	12	16	400	646	1313
3	12	11	42	107	0	0	0	0	1278	248	11	32	

Figure 4
Periodic management report format (X1 1 release 16)

REPT 1   ACD 001   1899 02 01

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	# XFER IDN	ACD	AVG TIME BUSY	POSN MANNED
8901	0	7	****	4	16	20	73	0	****	1234	34	138	646
8902	0	4	!	27	0	27	134	0	****	32	198	110	646
8903	0	!	14	2	398	400	246	0	****	12	16	400	646
3		12	4	11	42	54	107	0	****	1278	248	216	646

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABNDONED No	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW /BUSY	DELAY 1ST	ANN 2ND
8901	3	3	0	0	****	100	7	0	0	201	0	0
8902	4	0	2	0	****	100	0	0	0	10B	0	0
8903	14	0	14	6	13	100	0	7	3	551	5	1
3	21	3	16	6	13	100	7	7	3	751 10B	6	1

REPT 3

ROUTE CODE	NO. OF WORK	TRK HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T	ALL TRK BUSY PEG	TOTAL	LONG
DID-721	!	0	2654	0	0	2	0	85	10	3	10	6
TIE-728	!	2	123	2	2	0	2	219	10	2	8	5
2	1	2	2777	2	2	2	2	304	20	5	0	0
INTERFLOW ROUTES												
TIE-726	16	0	60	4	10	....				1	3	3
TIE-733	20	0	30	2	28					0	0	0

REPT 4

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFER IDN	ACD	BUSY TIME	MANNED TIME	Q/AGT ID
ACD DN 8901													
32	7	4	16	73	0	0	0	0	1234	34	138	646	4545
ACD DN 8902													
20	4	27	0	134	0	0	0	0	32	198	110	646	2222
ACD DN 89 03													
45	!	2	398	246	0	0	0	0	12	18	400	646	1313
3	12	11	42	107	0	0	0	0	1278	248	11	32	

Figure 5
Periodic management reports (XI 1 release 16) (call treatment changed in report period)
(Part 1 of 2)

REPT 1 — ACD 001 — 1899 02 01

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	# XFER IDN	# XFER ACD	AVG TIME POSN BUSY	AVG TIME POSN MANNED
8901	0	7	****	4	16	20	73	0	****	1234	34	138	646
8902	0	4	1	27	0	27	134	0	****	32	198	110	646
8903	0	1	14	2	398	400	246	0	****	12	16	400	646
3	12	4	11	42	54	107	0	****	1278	248	216	646

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED No	ABANDONED AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW BUSY	DELAY ANN 1ST	DELAY ANN 2ND
8901	3	3	0	0	****	100	7	0	0	201	0	0
8902	4	0	2	0	****	100	0	0	0	151 10B	0	0
8902	14	0	14	8	13	100	0	7	3	551	5	1
3	21	3	16	6	13	100	7	7	3	901 10B	6	1

REPT 3

ROUTE CODE	NO. OF TRK WORK	HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	ABANDONED AFT-T	ANSWERED BEF-T	ANSWERED AFT-T	ALL TRK BUSY PEG	ALL TRK BUSY TOTAL	LONG
DID-721	1	0	2654	0	0	2	0	85	10	3	10	6
TIE-728	1	2	123	2	2	0	2	219	10	2	8	5
2	1	2	2777	2	2	2	2	304	20	5	0	0
INTERFLOW ROUTES												
TIE-726	16	0	60	4	10	....				1	3	3
TIE-733	20	0	30	2	28	....				0	0	0
2	36	0	90	6	38	....				1	0	0

Figure 5
Periodic management reports (Xi 1 release 16) (call treatment changed in report period) (Part 2 of 2)

REPT 4

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFER		BUSY TIME	MANNED TIME	Q/AGT ID
									IDN	ACD			
ACD DN 8901													
32	7	4	16	73	0	0	0	0	1234	34	138	646	4545
ACD DN 8902													
20	4	27	0	134	0	0	0	0	32	198	110	646	2222
ACD DN 89 03													
45	1	2	398	246	0	0	0	0	12	16	400	646	1313
3	12	11	42	107	0	0	0	0	1278	248	11	32	

Figure 6
Periodic management report format (Xi 1 release 17) (Part 1 of 2)

ACD 001   1899 02 01

REPT1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	# XFER		AVG TIME POSN	
										IDN	ACD	BUSY	MANNEC
8900	2	11	14	47	171	218	37	4	16	1	1	1252	1455
8900	1	12	3	42	17	59	89	1	11	0	1	726	1800
6788	1	3	20	29	0	29	436	0	****	0	0	86	1394
8989	0	0	****	****	****	****	****	0	****	0	0	*****	*****
4	4	26	11	43	80	123	107	5	15	1	2	829	1526

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED		TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW BUSY
				No	AVG. WT					
8900	17	0	48	3	26	64	0	3	5	3B
8900	14	4	9	1	14	100	3	0	0	2I
6788	3	0	30	0	****	33	0	0	1	0
8989	0	0	0	0	****	0	0	0	0	0

Figure 6
Periodic management report format (XI 1 release 17) (Part 2 of 2)

4	34	4		48	4	23	76	3	3	6	21 3B
CDN	CALLS ACCPTED	CALLS ANSWERED			ABANDONED		TSF	ROUTE BY	DISC	BUSY	DFLT DN
		NO	ASA	LONG WT	N O	AVG T					
6800	7	0	****	0	0	*****	0	0	0	0	7
6801	15	6	27	30	2	10	25	7	0	0	0
6802	3	0	****	0	0	****	25	7	0	0	0
3	25	6	27	30	2	10	0	0	0	3	0

REPT 3

ROUTE CODE	NO-OF-TRK WORK	HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T	ALL TRK BUSY PEG	TOTAL	LONG
TIE-721	240	0	448	472	0	8	7	325	23	0	0	0
co-711	48	0	1051	1244	0	9	0	959	17	0	0	0
2	288	0	1499	1716	0	17	7	1284	40	0	0	0

INTERFLOW ROUTES

TIE-720	119	0	441	472	213	,,,,,,,,,,,,,,,,,,,		,,,,,,,,,,,,,,,,,		6	202	68
1	119	0	441	472	213			,,,,,,,,,		6	3	1

RAN ROUTES

RAN-789	3		22	2		. . . .		,,,, , ...			. .	
RAN-792	2		1	0								
2	5		23	2		,,,,,	,,,,,,,,	,,,,,,,,	,,,,,,,,		. . .	

REPT 4

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	XFER IDN	ACD	BUSY TIME	MANNED TIME	AGTID Q/P
ACD DN 8900													
4330 01	7	57	162	30	2	54	0	0	0	0	1588	1800	9999
6805 01	4	30	187	48	2	34	0	8	1	1	916	1110	7777
ACD DN 8800													
4335 04	12	42	18	90	1	14	•	9	•	1	827	19--	8888
ACD DN 6788													
6810 01	3	29	0	436	0	0	0	0	0	0	86	1394	6666
ACD DN 8989													
4	26	43	80	107	5	2	0	0	1	2	55	102	

Figure 7
Periodic management report format (XI 1 release 18) (Part 1 of 2)

ACD 001   1699 02 01

REPT1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	# XFER IDN	# XFER ACD	AVG TIME POSN BUSY	AVG TIME POSN MANNEE
8800	2	11	14	47	171	218	37	4	16	1	1	1252	1145
8900	1	12	3	42	17	59	89	1	11	0	1	726	1800
6766	1	3	20	29	0	29	436	0	****	0	0	86	1394
8989	0	0	****	****	****	****	****	0	****	0	0	****	****
4		26	11	43	80	123	107	5	15	1	2	829	1526

IVR DN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	# XFER IDN	# XFER ACD	AVG TIME POSN BUSY	AVG TIME POSN MANNEC
8888	1	3	5	50	0	50	16	0	0	0	1	80	100
1	1	3	5	50	0	50	16	0	0	0	1	80	100

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED NO.	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW BUSY
6800	17	0	48	3	26	64	0	3	5	3B
8900	14	4	9	1	14	100	3	0	0	2
6788	3	0	30	0	****	33	0	0	1	0
8989	0	0	0	0	****	0	0	0	0	0
4	34	4	48	4	23	76	3	3	6	2 3B

CDN	CALLS ACCPTED	CALLS ANSWERED NO	ASA	LONG WT	ABANDONED NO.	AVG. WT	TSF	ROUTE TO	DISC	BUSY	DFLT DN
6800	7	0	****	0	0	****	0	0	0	0	7
6801	15	6	27	30	2	10	25	7	0	0	0
6802	3	0	****	0	0	****	0	0	0	3	0
3	25	6	27	30	2	10	25	7	0	3	7

IVR DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED NO.	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW BUSY
8888	5	0	10	0	****	100	0	0	0	0
8887	2	0	2	1	30	50	0	0	0	0

Figure 7
Periodic management report format (XI 1 release 18) (Part 2 of 2)

2	7	0	10	1	30	75	0	0	0	0

REPT 3

ROUTE CODE	NO-OF-TRK		INC CALLS	INC CCS	OUT CALLS	ABANDONED		ANSWERED		ALLTRK BUSY		
	WORK	HPR				BEF-T	AFT-T	BEF-T	AFT-T	PEG	TOTAL	LONG
TIE-721	240	0	448	472	0	8	7	325	23	0	0	0
co-71 1	48	0	1051	1244	0	9	0	959	17	0	0	0
2	288	0	1499	1716	0	17	7	1284	40	0	0	0

NTERFLOW ROUTES

TIE-720	119	0		441	472		213	....		6	202	68
1	119	0		441	472		213			6	3	1

RAN ROUTES

RAN-789	3		22	2			.,.,.,.,.	. . . . ..l.....		. . .		. .
RAN-792	2		1	0			.....	. . . . . .,.......				.....
2	5		23	2		...	......	..	...	,,,,,,		

REPT 4

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	BUSY TIME	MANNEDTIME	Q/AGT ID
ACD DN 8900											
4330 01	7	57	162	30	2	54	0	0	588	1800	9999
6805 01	4	30	187	48	2	34	0	8	916	1110	7777
ACD DN 8800											
4335 04	12	42	17	89	1	14	0	8	726	1800	8888
ACD DN 6788											
6810 01	3	29	0	436	0	0	0	0	86	1394	6666
ACD DN 8989											
4	26	43	80	107	5	2	0	0	55	102	

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	BUSY TIME	MANNED TIME	Q/AGT ID
IVR DN 8088											
25	10	7	16	73	0	0	0	0	155	601	4444
1	10	7	16	73	0	0	1	0	155	601	1

Report 1: Agent Group Report

Beginning with X1I release 18, the IVR queue statistics are separated from
the regular queue statistics and appended to Report 1.

Report] reflects the activity of the ports used for IVR.

- The CALLS ANSWD field increments when an IVR port answers a call
  that was queued to its ACD-DN by way of the ITR for IVR command.
  The ASA field reflects only the time the call was queued to this ACD-
  DN, not the total duration of the call.

- The # XFER field increments when a call is queued to the IVR queue in
  Not CCR-Handled mode, and the IVR port transfers or conferences the
  call. The # XFER field increments when the transfer or conference is
  complete.

Table 3
REPORT 1: Agent Group Report field descriptions (Part 1 of 3)

Field title	Description
ACD DN (4 to 7 digits)	**Identification** The ACD DN (up to seven digits) is given to identify the queue.
IVR DN	**Identification** The IVR DN (up to seven digits) provides IVR treatment to incoming calls. *See Automatic Call Distribution advanced features description* (553-2671-101)
AVG AGTS (4 digits)	**Average Agents Available** The sum of all the Position Manned times for this queue, divided by the length of the reporting interval (e.g., 1800 or 3600 seconds). This statistic is meaningless in reporting periods that last longer than one hour, such as the first report of the day. It is meaningless because the manned time may exceed the length of the reporting interval, thus indicating more agents than the actual number of agents,
CALLS ANSWD (5 digits)	**Incoming Calls Answered** The number of ACD calls answered by an ACD agent position within the ACD DN (see Note 1).
ASA (4 digits)	**Average Speed of Answer** This is the sum of all waiting times for all calls coming into the ACD queue (and answered), divided by the number of incoming calls answered but not including Timed Overflow In Calls from another queue. Where TOF In Calls are calls answered by an agent of this queue because the call had been put in the TOF queue of another source DN, and an agent of the other source DN. The ASA value changes because TOF In Calls represent calls that are answered, but *not* accepted by this ACD DN, which is the target queue of a TOF queue (see Note 3).
AVG DCP (4 digits)	**Average Direct Call-Processing (DCP) Time** Average time (in seconds) that each agent spent handling ACD **calls.** Handling time is the time from initial answer of the call to final release of the call (see AVG HDCP). Average DCP time is the sum of all handling times, divided by the number of incoming calls answered by the group.
AVG HDCP (4 digits)	**Average Held Direct Call Processing Time** (optional field) Average time (in seconds) that each agent spent with an ACD call placed on Hold. Handling time is measured from the time when the agent puts the ACD call on Hold to the time the agent becomes active on the call again, or the caller abandons the call. Average HDCP time is the sum of all ACD call hold times divided by the number of ACD calls answered by the group. When HDCP appears, AVG DCP time does not include the HDCP time; AVG DCP time is the time that the agents are active on the call, excluding holding time of ACD calls.

Table 3
REPORT 1: Agent Group Report field descriptions (Part 2 of 3)

Field title	Description
TOTAL HDCP (5 digits)	**Total Held Direct Call Processing Time** (optional field). Total time in seconds spent with an ACD call on hold. The hold time is measured from the time that the agent puts the ACD call on Hold until the agent becomes active again on the ACD call or it is released by the caller. Total HDCP is the sum of all times that this agent position had ACD calls on Hold. When this field is displayed, TOTAL DCP time only reflects the time that the agent position was active on the ACD calls. If no calls are answered at this agent position, a zero is output for totals.
AVG PCP (4 digits)	**Average Post/Pre Call-Processing (PCP) Time** Average time in seconds that each agent spent Not Ready per ACD incoming call. Average PCP time is measured from the time the agent goes into Not Ready (NRD key activated, or the Not Ready SPRE code is entered), until the occurrence of any event that removes the agent from Not Ready. The average PCP time is the total time accumulated against all NRD states divided by the total number of ACD calls answered on this group (see Note 2).
AVG WORK (4 digits)	**Average Work Time** Average time (in seconds) that each agent required to serve incoming ACD calls. This includes Direct Call-Processing, Held Direct Call-Processing (if options are selected), and Post/Pre Call-Processing times (see Note 2).
AVG WAIT (4 digits)	**Average Waiting Time** This is the sum of all time that an agent was available to receive an ACD call divided by the number of incoming ACD calls answered (see Note 2).
DN CALLS (5 digits)	**Number of DN Call** A peg count of the number of times that agents initiated or received a call on their individual DN keys. Transfer and conference keys are also included in this category.
AVG TIME (4 digits)	**Average DN Call Time** This is the sum of all times from the initial selection of the individual DN key, including transfer and conference keys, to the final release of the call, divided by the number of these calls. The system only accumulates call time for one DN call per agent position at a time. It is not possible to add multiple simultaneous events as the total would exceed real clock time. This means that if an agent position has more than one DN key and the agent uses both at once, the reported DN call time will not be accurate (cannot track both DN keys). Agent positions should be configured with only one DN key unless the customer is willing to forego the accuracy of DN call statistics.

Table 3
REPORT 1: Agent Group Report field descriptions (Part 3 of 3)

Field title	Description
AVG-TIME-POSN AVG.BUSY (5 digits) AVG MANNED (5 digits)	**Average Position Busy and Manned Time** This is a two part field. The AVG BUSY time is the sum of all Position Manned times, minus the sum of all waiting times, divided by the number of positions which had any Position Manned time accumulated against them. AVG MANNED time is the sum of all Position Manned times, divided by the number of agent positions which had manned time accumulated (see Note 4). An agent position is considered manned whenever one of the following conditions exists: — The MAKE BUSY lamp is dark and the agent is logged in. — The MAKE BUSY lamp becomes lit while the agent is active on any call and the agent is logged in. — The agent position is in the Not Ready state and the agent is logged in. The agent is logged in and has not entered the Make Set Busy SPRE code (for the 500/2500 agent telephones).

Note *1:* Data shown in the CALLS ACCEPTED field is based on the following:

— If a call is Night Forwarded, it is counted in the INTERFLOW field for the Source ACD DN in the Queue report.
— If the Night Forwarded number is an ACD DN, the call accepted, answered, abandoned, etc., is reflected in the count for the destination ACD DN. The call is not counted as accepted against the source ACD DN.
— If a call is not Night Forwarded (whether or not Night RAN is given), it counts as call accepted, answered, etc., against the source ACD DN. It will not count under Interflow in this case.
— If the Time Overflow feature is used, the Calls Answered value includes calls that Time Overflowed from another queue to this one (TOF-IN), as well as the number of calls that Time Overflow to another ACD DN (TOF-OUT) from this one.
— This report displays only the time spent in the ACD queue, EAR calls are reflected in the CALLS ANSWD field if the calls are answered at the ACD DNs. CDN reports show information from the caller's point of view. For example, a call script could be written such that a call would wait 10 seconds before it is queued to an ACD DN. If the call then waited 10 more seconds before being answered, the wait time in the CDN would show 20 seconds and the wait time in the ACD DN would show 10 seconds.

Note 2: These fields may indicate abnormally high values if the number of calls answered by the group is less than the average number of agents available. This tells the supervisor doing load management that the group was over manned during the reported interval (previous report period).

Note 3: This report displays only the time spent in the ACD queue, not the time spent in the system (in the CDN). EAR calls are reflected in the CALLS ANSWD field if the calls are answered at the ACD DNs. However, only the time that the call spent in the ACD queue is reflected, but not the time spent in the system.

Note 4: AVG BUSY time can also be considered as the sum of all busy time for the group, divided by the number of agent positions that accumulated manned time.

Report 2: Queue Report

Report 2 has been modified with the Time Overflow feature. Beginning with Xl 1 release 10, the Threshold fields (CWTH BYTH OVTH) are removed and are replaced by the following field types:

Recall to Source

- Answered Longest Wait Time

- Time Overflow In and Time Ovefflow Out

Xl 1 release 16 added an entry to REPT 2 for the Supervisor Control of Queue Size feature. The column heading previously labeled Interflow now reads **Interflow/Busy.** The Interflow and Busy reports are mutually exclusive, so a queue may have one or the other listed on the report. If an entry appears due to If a CCR IVR call abandons while queued to an IVR queue or presented to an busy treatment, the entry has a "B" beside the numbers. For the entry appearing for an interflow treatment, an "I" appears next to the number. The totals line appears split with the "B" and "I" labels indicating the busy and interflow totals independently. It also indicates calls which went to Night treatments if defined in the ACD DN. See Figure 4 for an example of management reports with this feature.

If the configuration changes during the period covered by a single report, and calls have been treated with both options, a dual line display appears. The entries are designated with the "B" and "I" indicators. The Intefflow or Busy treatment is determined in the service change.

With X11 release 17, first and second RAN access are no longer pegged against the ACD DN queue, and Delay Announcement columns were removed from Report 2. The RAN information is included in the RAN report section of Report 3.

CDN report With X11 release 17 a report is appended to Report 2 showing CDN statistics. This report applies primarily to EAR and CCR calls., with fields showing CDN, CALLS ACCPTED, BUSY, and DFLT DN. Some fields apply to CCR only; some are reserved for future use.

Figure 8
REPORT 2: CDN header format

CDN	CALLS ACCPTED	CALLS ANSWERED			ABANDONED		TSF	ROUTE BY		DISC	BUSY	DFL DN
		N O	ASA	LONG WT	NO.	AVG. WT		IVR	CCR			
6800	7	0	****	0	0	****	0	0	1	0	0	7
6801	15	6	27	30	2	10	25	1	1	0	0	0

Table 4
REPORT 2: CDN appendix (Part 1 of 2)

Field title	Description
CDN (4 to 7 digits)	**Control DN** This field shows a directory number (up to 7 digits) of the CDN.
CALLS ACCPTED (6 digits)	**Calls Accepted** The total number of calls entering the CDN and receiving controlled operation or default operation. CALLS ACCPTED = CALLS ANSWERED NO + ABANDONED NO + ROUTE TO + DISC + BUSY +DFLT DN
CALLS ANS-WERED NO (5 digits)	**Number of Calls Answered** The number of calls that entered the CDN and were answered with the controlled operation.
ASA (4 digits)	**Average Speed of Answer** The average speed of answer for the calls in the CALLS ANSWERED NO field. The ASA field is upgraded when the next report is updated. The ASA field is not updated when the ACD queue goes into night service or during the 30-second display of ongoing status.
LONG WT (8 digits)	**Longest Wait time** The longest time a call waited before answer in the CALLS ANSWERED NO field.
ABANDONED NO (3 digits)	**Number of Abandoned calls** The total number of calls accepted into the CDN but abandoned before being answered through the controlled operation.
AVG WT (4 digits)	**Average Wait** The total of all waiting times for abandoned calls divided by the number of calls abandoned in the ABANDONED NO field.
TSF (4 digits)	**Telephone Service Factor** The percentage of controlled calls answered or abandoned before the time threshold defined as the TSFT for the CDN.
ROUTE TO (4 digits)	**Routed calls** The number of controlled calls given a Route To command (and no additional processing). See Note 2.

Table 4
REPORT 2: CDN appendix (Part 2 of 2)

Field title	Description
DISC (4 digits)	**Forced Disconnect** The total number of controlled calls that were given force disconnect by the system.
BUSY (4 digits)	**Forced Busy** The total number of controlled calls given the forced busy treatment by CCRM, including calls busied by the CDN call ceiling.
DFLT DN (4 digits)	**Default DN** The number of CDN calls that were sent to the default ACD DN.

Note 1: The CALLS ACCPTED field is pegged when a call enters a CDN.

Note 2: The CALLS ANSWERED field is not incremented by a CCR IVR call if the call is placed in an IVR queue by way of an IVR command and answered at an IVR port. With this feature, the ROUTE TO field is split to include calls routed by IVR, and calls routed by CCR. Calls routed by CCR are routed by way of the ITR for IVR command.

Note 3: The ROUTE BY IVR field is incremented if the call is queued to receive IVR treatment and the IVR device initiates a call modification to another field.

Note 4: Only the CALLS ACCPTED, BUSY, and DFLT DN fields apply to EAR calls

IVR Queues With X11 release 18 and later, when a CCR call is queued to an IVR queue by the ITR for IVR command, the call appears in the CALLS ACCEPTED report field. (If a CCR call enters the queue via a Queue To command the call appears in the CALLS ACCPTED field only if it is answered by a queue agent.

The ANSWERED LONGEST WT. TIME and TSF times reflect the time the call was queued to the IVR queue, not the total duration of the call.

Figure 9
REPORT 2: IVR header format

IVR DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST W-r TIME	ABANDONED NO.	AVG. W-r	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW BUSY
8887	5ı	ıı	10ı	l1	****	100₅₀	0ı	ıı	ıı	ıı

Table 5
REPORT 2: IVR appendix (Part 1 of 3)

Field title	Description
IVR DN (4 to 7 digits)	**IVR Identification** The IVR DN (up to seven digits) provides IVR treatment to incoming calls. *See Automatic Call Distribution advanced features description* (553-2671-101).
CALLS ACCPTED (6 digits)	**Calls Accepted** The total number of calls placed in this IVR DN call queue, including any Overflow by Number calls from another IVR DN and the EAR calls routed by the default treatment to this IVR DN (see Note 1).
RECALL TO SOURCE (6 digits)	**Recall To Source** Recall to Source increments when a call Time Overflows in the Target IVR DN queue (because it previously Overflowed or Inter-flowed by number) and is recalled back to the source IVR DN to be linked to the source IVR DN's TOF queue. (see Note 2).
ANSWERD LONGEST WT. TIME (8 digits)	**Longest Wait Time for Answered Calls** The longest time a call had to wait before being answered, excluding Time Overflow calls answered by a target agent and including Recall to Source calls answered by a source agent. The total line of all reports shows the Longest Wait Time for all IVR DNs. The hourly report shows the Longest Wait Time for that hour per IVR DN, including EAR calls sent by default treatment to this IVR DN.
ABANDONED NO. AVG. WT. (3 digits) and (4 digits)	**Number of Calls Abandoned and Average Waiting Time for each call** The sum of all waiting times for caller-disconnected calls divided by the number of calls abandoned in this queue. Calls abandoned while being presented to an agent are included. Calls abandoned in the Time Overflow (TOF) queue are charged against the called IVR DN.

Table 5
REPORT 2: IVR appendix (Part 2 of 3)

Field title	Description

TSF
(4 digits)
	Telephone Service Factor Measures how quickly incoming calls are answered. The customer specifies the time T (in seconds) with a service change or by using the TSF command (see "Telephone Service Factor time (TSF)" on page 30. The percentage of incoming calls answered or abandoned before T seconds is the TSF. A value of 100 means that all calls were answered or abandoned within T seconds.
	
	BT = calls Answered/Abandoned BEFORE T seconds.
	AT = calls Answered/Abandoned AFTER T seconds.
	TO = TOTAL of calls Answered or Abandoned.
	  (1) BT+AT=TO
	  (2) BT ÷ TO = TSF
	
	Calls Time Overflowed and answered by target agents (TOF In Calls), are included in these calculations because TOF In Calls accumulate a Before T (BT) value. However, TOF In Calls do not last in the target queue long enough to accumulate an After T (AT) value.
	Calls Time Overflowed from a source IVR DN (TOF-OUT) are not counted in this field because the TSF factor does not apply to calls answered by the source agent. The TSF field is upgraded when the next report is updated. The TSF field is not upgraded when the IVR queue goes into night service or during the 30 second display of ongoing status.

TOF IN (3 digits)	**Time Overflow Calls In** The number of calls redirected by the Time Overflow (TOF) feature. The TOF-IN field shows the number of calls which exceed a TOF Timer (TOFT) and overflow by time into this IVR DN.
TOF OUT (3 digits)	**Time Overflow Calls Out** The number of calls redirected by the Time Overflow (TOF) feature. The TOF-OUT field shows the number of calls which exceed the TOFT and overflow by time to a target IVR DN.
OVERFLOW (5 digits)	**Calls Overflowed to Another Queue** The total number of calls redirected to another IVR DN with Automatic Overflow, excluding Time Overflow calls.

Table 5
REPORT 2: IVR appendix (Part 3 of 3)

Field title	Description
INTERFLOW BUSY (7 digits)	**Calls given standard Interflow treatment or calls given Busy tone** The number of calls treated as standard Inter-flow calls and calls given a busy tone by Supervisor Control of Queue Size. Inter-flow calls are indicated with an I appended to the entry; calls treated with the busy tone are noted with a B next to the entry. The Totals row lists both types of call treatment.

Note *1:* Data shown in the CALLS ACCPTED field is based on the following:

    If a call is Night Forwarded, it is counted in the INTERFLOW field for the source IVR DN in the Queue report. If the Night Forwarded number is an IVR DN, then calls accepted, answered, abandoned, etc., are reflected in the count for the destination IVR DN. The call is not counted as call accepted, etc., against the source IVR DN.

-    If a call is not Night Forwarded (whether or not Night RAN is given), it counts as call accepted, answered, etc., against the source IVR DN. It will not count under Interflow in this case.

-    If the Time Overflow feature is used, the Calls Answered value includes answered Time Overflow calls from another queue. Calls to this IVR DN which are answered by another queue (via Time Overflow) are not counted.

Note 2: The source IVR DN to which the call is recalled has its Call Accepted value increments.

If a CCR IVR call resides in an IVR queue and an ACD queue, and an ACD queue agent becomes available, the call transfers from the IVR queue to the ACD agent. This is also true for ACD queue CCR IVR calls presented to an IVR port (applies to interruptible mode IVR only). The IVR-queue pegging shows the call as accepted. No other IVR Queue Report statistics are pegged for that call..

Table 6
REPORT 2: Queue Report field descriptions (Part 1 of 3)

Field title	Description
ACD DN (4 to 7 digits)	**ACD Identification** Shows the ACD DN (up to seven digits) of the queue being reported.
IVR DN (4 to 7 digits)	**IVR Identification** The IVR DN (up to seven digits) provides IVR treatment to incoming calls. *See Automatic Call Distribution advanced features description* (553-2671-101).
CALLS ACCPTED (6 digits)	**Calls Accepted** The total number of calls placed in this ACD DN call queue, including any Overflow by Number calls from another ACD DN. Time Overflow calls from another ACD DN are not included. It includes the EAR and CCR calls routed by the default treatment to this ACD DN (see Note 1).
RECALL TO SOURCE (6 digits)	**Recall To Source** If a call Time Overflows while in the Target ACD DN queue (because it previously Overflowed or Interflowed by number), then it is recalled back to the source ACD DN to be linked to the source ACD DN's TOF queue and the Recall To Source field increments (see Note 2).
ANSWERD LONGEST WT. TIME (8 digits)	**Longest Wait Time for Answered Calls** This field shows the longest time a call had to wait before being answered, excluding Time Overflow calls answered by a target agent but including Recall to Source calls answered **by** a source agent. The total line shows the Longest Wait Time for all ACD DNs. The hourly report shows the Longest Wait Time for that hour per ACD DN, including the EAR and CCR calls sent by default treatment to this ACD DN.
ABANDONED NO. AVG. WT. (3 digits) and (4 digits)	**Number of Calls Abandoned and Average Waiting Time for each call** This number is the sum of all waiting times for caller-abandoned calls, divided by the number of abandoned calls. The sum includes calls abandoned while being presented to a target queue agent. Calls abandoned while in the Time Overflow (TOF) queue are charged against the called ACD DN.

Table 6
REPORT 2: Queue Report field descriptions (Part 2 of 3)

Field title	Description
TSF (4 digits)	**Telephone Service Factor** The TSF measures how quickly incoming calls are answered. The customer specifies the time T (in seconds) in a service change or by using the TSF command described in "Telephone Service Factor time (TSF)" on page 30. The percentage of incoming calls answered or abandoned before T seconds is the TSF. A value of 100 means that all calls were answered or abandoned within T seconds. BT = calls Answered/Abandoned BEFORE T seconds. AT = calls Answered/Abandoned AFTER T seconds. TO = TOTAL of calls Answered or Abandoned. (1) BT+AT=TO **(2)** BT ÷ TO = TSF Calls Time Overflowed and answered by target agents (TOF In Calls), are included in these calculations because TOF In Calls accumulate a Before T (BT) value. However, TOF In Calls do not last in the target queue long enough to accumulate an After T (AT) value. Calls Time Overflowed from a source ACD DN (TOF-OUT) are not counted in this field because the TSF factor does not apply to calls answered by the source agent. The TSF field is upgraded when the next report is updated. during the 30 second display of ongoing status.
OVERFLOW (5 digits)	**Calls Overflowed to Another Queue** The total number of calls redirected to another ACD DN by using Automatic Overflow, excluding Time Overflow calls.
INTERFLOW (7 digits)	**Calls Interflowed to Another DN** The total number of calls removed from this queue and directed to another (internal or external) DN by the interflow mechanism (see Note). This field does not include Time Overflow calls.
INTERFLOW BUSY (7 digits)	**Calls given standard Interflow treatment or calls given Busy tone** This field indicates the number of calls treated as standard Interflow calls and calls given a busy tone by the Supervisor Control of Queue Size feature. Inter-flow calls are indicated with an I appended to the entry; calls treated with the busy tone are noted with a B next to the entry. The Totals row lists both call types.
TOF IN (3 digits)	**Time Overflow Calls In** The number of calls redirected by the Time Overflow (TOF) feature. The TOF-IN field shows the number of calls which that a TOF Timer (TOFT) and overflow by time into this ACD DN.

Table 6
REPORT 2: Queue Report field descriptions (Part 3 of 3)

Field title	Description
TOF OUT (3 digits)	**Time Overflow Calls Out** The number of calls redirected by the Time Overflow (TOF) feature. The TOF-OUT field shows the number of calls that exceed the TOFT and overflow by time to a target ACD DN.
DELAY-ANN 1ST 2ND (4 digits each)	**First and Second RAN Count** They are reflected as RAN routes accesses in the RAN report of Report 3, which also shows RAN access requested by EAR. These two fields show the number of times first and second Recorded Announcement (RAN) treatment was given during the reported period. A call can only get one First RAN treatment and one peg against DELAY-ANN 1 ST. Each time that a call receives second RAN treatment it is pegged against DELAY-ANN-2ND.
THRESHOLDS CWTH BYTH OVTH	**Automatic Queue Overflow Thresholds** These are three thresholds associated with Automatic Call Queue Overflow (see Note 3). CWTH = Call Waiting Threshold BYTH = Busy Threshold OVTH = Overflow Threshold

Note *1:* Data shown in the CALLS ACCPTED field is based on the following:

— If a call is Night Forwarded, it is counted in the INTERFLOW field for the source ACD DN in the Queue report. If the Night Fonvarded number is an ACD DN, then calls accepted, answered, abandoned, etc., are reflected in the count for the destination ACD DN. The call is not counted as call accepted, etc., against the source ACD DN. If a call is not Night Fonvarded (whether or not Night RAN is given), it counts as call accepted, answered, etc., against the source ACD DN. It will not count under Interflow in this case.

— If the Time. Overflow feature is used, the Calls Answered value includes answered Time Overflow calls from another queue. Calls to this ACD DN which are answered by another queue (via Time Overflow) are not counted.

Note 2: The source ACD DN to which the call is recalled has its Call Accepted value increments.

Note 3: The Threshold fields do not appear in X11 release 10 and later. They are replaced by TOF   IN/TOF OUT field reports.

Note 4: The Interflow field does not appear in X11 release 16 reports. It is replaced by the field heading INTERFLOW/BUSY. This field lists the totals of calls treated with Interflow treatment or Busy tone.

Note 5: The DELAY ANN 1 ST and 2ND peg count does not necessarily equal the CALLS ACCPTD peg count. It is possible for a caller to hear RAN both before and after a transfer. In this case, the CALLS ACCPTD count would tally only one call while there are two DELAY ANN pegs.

Report 3: RAN Report

REPT 3 includes RAN route information in the Interflow routes section. With Xl 1 release 17 and later, first and second RAN access is not pegged against the ACD DN queue.

The following table gives information on the fields of Report 3.

Table 7
REPORT 3: Trunk Routes Report field descriptions (Part 1 of 2)

Field title	Description
ROUTE CODE (up to 7 digits)	**Trunk Route Identification** The trunk route access code and the type. For example, CO, FX and WATS trunks for all X11 software releases. In addition, DID, CCSA and Tie trunks for Xl 1 release 3 and later; RAN trunk route for Xl 1 release 17 and later.) If the DN expansion package has been included, this field is three spaces longer.
NO-OF-TRK **WORK HPR** (4 digits)	**Number of Trunks** A snapshot of the number of trunks assigned and working, plus priorities, at report generation time. — ASSN The number of trunks (including non-ACD trunks) currently assigned to the trunk route. — WORK The number of trunks (including non-ACD trunks) that are currently enabled. — **HPR** The number of trunks currently given priority.
INC **CALLS** (6 digits)	**Total Number of Incoming Calls Offered** The total number of calls that came in on this trunk route (including non-ACD calls) during the report period.The total number of calls per ACD DN equals the total number of INC CALLS for all trunk routes terminating on the ACD DN.
INC CCS (5 digits)	**Total Incoming Traffic** The total incoming trunk traffic for the trunk route (in CCS) between seizure and disconnect (including non-ACD calls, if any).
OUT CALLS (5 digits)	**Total Outgoing Calls** The total number of calls outgoing on this route. These are non-ACD calls, but could include outgoing calls made from the DN keys of the ACD agent positions.
OUT CCS (5 digits)	**Total Outgoing Traffic** This figure shows the outgoing call traffic (in CCS) on the trunk route.

Table 7
REPORT **3: Trunk Routes Report field descriptions (Part 2 of 2)**

Field title	Description
ABANDONED BEF-T AFT-T (5 digits) (6 digits)	**ACD Auto-Terminating Trunk Calls Abandoned** Two peg counts of calls abandoned showing how many were abandoned before and after the time T used for TSF. The value used for T depends on the trunk involved and on which queue that trunk terminates.The ABANDONED AFT-T field indicates the number of calls abandoned after a customer defined Time Threshold.
ANSWERED BEF-T AFT-T (6 digits) (5 digits)	**ACD Auto-Terminating Trunk Calls Answered** The number of calls delayed longer than the customer specified time is shown in the ANSWERED AFT-T field. The value for T is obtained from the ACD DN whose agent answered the call. If a call time overflows and is answered by a target ACD DN, the value of T set for the target ACD DN is used.When the value of T is set to a minimum value such as 1, all calls encountering any delay are counted as having waited. The definition of calls that have waited too long can be adjusted by changing the T value.
ALL-TRK-BUSY PEG TOTAL LONG (4 digits) (5 digits) (4 digits)	**All Trunks** Busy This statistic shows the All Trunks Busy (ATB) information of the ACD Routes and the Inter-flow Trunk Routes at the time of report generation: PEG: The ATB peg count of the route. TOTAL: The total duration of the ATB condition of the route in seconds. LONG: The longest ATB duration of the route.

Note *1:* INC CALLS equals ABANDONED BEF-TAFT-T plus ANSWERED BEF-TAFT-T. Do not try to relate these fields to those of ACD-C reports 1 and 2 (CALLS ANSWD, CALLS ACCPT and ABANDONED NO). These fields are auto-terminating trunks and reflect how the trunk was first handled (answered or abandoned).

Note 2: Only Route Code, No-of-Trunks Work, INC Calls and INC CCS apply to the RAN report, X11 release 17.

Note 3: If a trunk busy condition exists beyond a single reporting period (for example it begins during period 1 and is still busy during period 2) that condition may be pegged for both periods, The ATB count may differ slightly from the other peg totals.

Report 4: Agent Position Report

The IVR ports statistics are separated from the non-IVR agent position statistics as shown in Table 5, "REPORT 2: IVR appendix," on page 60.

Table 8
REPORT 4: Position Report field descriptions (Part 1 of 3)

Field title	Description
POS ID (up to 7 digits)	**Identification** Shows the ACD POS ID of the agent being reported.
CALLS ANSWD (5 digits)	**Incoming Calls Answered at this Position** Total incoming calls, including Time Overflow calls to this agent position (TOF In Calls).
AVG DCP or TOTAL DCP (5 digits)	**Average or Total Direct Call-Processing (DCP) Time** Handling time is the time between initial answer to final release of the call (see Total HDCP). The Average DCP time is the sum of all handling times (time between initial answer and final release of the call) divided by the number of answered calls. The Total DCP time is the total of all the times the In Calls key lamp was steadily lit, which is handling time minus total HDCP time. If no ACD calls were answered at this agent position, the average field contains asterisks (****); totals contains zeroes.
TOTAL HDCP (5 digits)	**Total Held Direct Call-Processing Time** (Optional Field) The sum of all hold times, measured from the time that the agent places the ACD call on Hold until the agent reactivates the call or the caller disconnects. When this field appears, TOTAL DCP only reflects the time that the agent position was active on the ACD calls. If no calls are answered at this agent position, the totals field contains zeroes.
AVG PCP or TOTAL PCP (5 digits)	**Average or Total Post/Pre Call-Processing Time** Average or total time, in seconds, that this position was in the Not Ready state, measured from the time that the agent activates the Not Ready key until any event which removes the position from Not Ready: for example, pressing the In Calls key, pressing the Not Ready key again, or going active on any DN key. The average PCP time is the sum of all Not Ready times divided by the number of ACD calls answered at the agent position. The total PCP time is the total of all Not Ready state times. If no ACD calls were answered at this agent position, the average field displays asterisks (****) and the totals field displays zeroes.

Table 8
REPORT 4: Position Report field descriptions (Part 2 of 3)

Field title	Description
AVG **WAIT** or **TOTAL** WAIT (5 digits)	**Average or Total Waiting Time** Average or total time that the agent position was available to receive calls. The average wait time is the sum of all the waiting time that the agent position was available to receive any call, divided by the number of ACD calls answered at this agent position. The total waiting time sums all waiting times for this agent position. If no ACD calls were answered at this agent position, the fields show asterisks (****); if there was no waiting a zero appears.
DN INC (4 digits)	**Total number of incoming calls** Shows the total number of incoming calls on the agent's DN key(s) during the report period.
INC TIME (4 digits)	**Total duration** The duration (in seconds) of all incoming calls on the agent's DN key(s) during the report period, timed from call answer to final call release.
DN OUT (4 digits)	**Total number of outgoing calls** The total number of outgoing calls from this agent position using DN, conference or transfer keys.
OUT TIME (5 digits)	**Total time** Total time (in seconds) of all outgoing calls from this agent position timed from the initial DN activation to final call release.
BUSY TIME (5 digits)	**Total Position Busy Time** Total agent position manned time, minus the total waiting time shown in seconds. Busy Time can also be expressed by the following formula: Busy Time = *all* DCP TIME + HDCP TIME + *all* Post/Pre Call Processing Time + INC TIME + OUT TIME
MANNED TIME (6 digits)	**Total Position Manned Time** The sum of all manned time for all agent positions. Time is accumulated when an agent position is considered manned and the agent logged in under one or more of the following conditions: — The MAKE BUSY lamp is dark and the agent is logged in. — The MAKE BUSY lamp becomes lit while the agent is active on any call and the agent is logged in. — The agent position is Not Ready and the agent is logged in (see Note).

Table 8
REPORT 4: Position Report field descriptions (Part 3 of 3)

Field title	Description
AGT ID Q/P (4 digits)	**Agent Identification** (Optional Field) The ACD AGENT ID of the agent being reported. This field appears when Report Control in Service Change LD23 define the Short Report and Agent ID options as YES. If a new agent occupies the agent position, the ID of the previous agent appears, accompanied by an asterisk. One or more Short Reports with Agent ID are generated when one or more of the following conditions exist: — A new agent logs into an agent position that was manned by another logged in agent. In this case the Q/AGT ID field will show the Agent ID of the previous agent The line of statistics reflects data accumulated for the previously logged-in agent. — The position is moved from one ACD group (ACD DN) to another. In this case, the Q/AGT- D field will display the queue identification of the queue to which the agent was formerly assigned.

Note *1:* All of the REPT 4 time fields are reported as currently manned (or previously was, if not currently manned). If the optional AGENT ID is used along with Short Reports, the Short Report will show *all* of the time for the agent position during the reported period.

Note 2: If an agent is involved in a conference call, an IDN call, or is transferring a call when the report is generated, the OUT TIME field includes the call start time minus the current time. The DN OUT and XFER IDN fields are not incremented until the call is released, and are reflected in the next reporting period.

Ongoing Status Display

The Ongoing Status Display is presented on the Video Display Terminal (VDT) display, and updated every 30 or 60 seconds, as specified through ACD Service Change. The Ongoing Status Display reports on both ACD DNs and CDNs for the customer.

EAR The TSF, ASA and #CALLS IN QUEUE fields include EAR calls routed by the *default* treatment to the ACD DN since these calls are treated as if they had entered the queue directly. CDNs do not appear in the status display, as incoming CDN calls are routed to the default ACD DN immediately.

Ongoing Status report control determines if the ongoing status information is printed. If RPRT is no, ongoing status reports are not printed.

An example of the Ongoing Status Display Output is shown in Figure 10.

Figure 10
Ongoing Status Display format

ACD DN	TSF	ASA	#CALLS IN QUEUE	#POS MANNED	#POS DCP	#POS PCP	#POS WTG	#POS NON ACD	#VIRTUAL CALLS QD
2222	100	2	0	1	0	!	0	0	0
5555	46	120	8	1	!	0	0	0	0
ACD DN	TSF	ASA	#CALLS IN QUEUE	#POS MANNED	#POS DCP	#POS PCP	#POS WTG	#POS NON ACD	#VIRTUAL CALLS QD
2222	100	2	0	1	0	1	0	0	0
5555	45	la4	7	2	2	0	0	0	0
ACD DN	TSF	ASA	#CALLS IN QUEUE	#POS MANNED	#POS DCP	#POS PCP	#POS WTG	#POS NON ACD	#VIRTUAL CALLS QD
2222	100	2	0	!	0	!	0	0	0
5555	44	242	6	3	3	0	0	0	0
ACD DN	TSF	ASA	#CALLS IN QUEUE	#POS MANNED	#POS DCP	#POS PCP	#POS WTG	#POS NON ACD	#VIRTUAL CALLS QD
2222	100	2	0	3	!	!	!	0	0
5555	44	296	5	4	4	0	0	0	0
ACD DN	TSF	ASA	#CALLS IN QUEUE	#POS MANNED	#POS DCP	#POS PCP	#POS WTG	#POS NON ACD	#VIRTUAL CALLS QD
2222	100	2	0	3	!	!	!	0	0
5555	44	296	5	4	4	0	0	0	0

CCR Ongoing Status Display appears for CDNs if it is in the *controlled* mode.

The "Queue To" command sends CCR calls to an ACD DN. The ACD DN #CALLS IN QUEUE field does not include the CCR calls. The TSF and ASA fields only include CCR calls answered by agents of this ACD DN.

If the CCR feature is used, the Ongoing Status Display reports on both ACD DNs and CDNs for the customer. CDNs have values only in the TSF, ASA, and the #CALLS IN QUEUE fields; all other fields contain asterisks.

The fields are described below:

- #CALLS IN QUEUE reflects the total controlled calls in the system that originated from this CDN.

- TSF indicates the percentage of controlled calls answered or abandoned before a certain threshold (TSFT).

- **ASA** displays the average speed of answer for the calls that entered this CDN and were answered through the controlled operation.

If load management or error conditions change the CDN to default mode from controlled mode, the Ongoing Status still appears. The Ongoing Status Display does not show the CDNs if they are always in the default mode. Abnormal conditions that divert new calls to the default ACD DN prevent the CDN #CALLS IN QUEUE field from incrementing until a Start Up message is received, although the CDN continues to appear on the Ongoing Status report.

An example of the Ongoing Status Display Output for CCR CDNs is below.

Table 9
Ongoing Status Display field descriptions (Part 1 of 2)

Field title	Description
ACD DN (4 to 7 digits)	**Identification** Shows the ACD DN of the queue being reported.

TSF
(3 digits)
	Telephone Service Factor The percentage of incoming calls answered or abandoned before T seconds is the TSF. The customer specifies the time T in seconds with a service change or the TSF command (see "Telephone Service Factor time (TSF)" on page 30. A value of 100 means that all calls were answered or abandoned within T seconds.
	
	    BT = calls Answered/Abandoned BEFORE T seconds.
	    AT = calls Answered/Abandoned AFTER T seconds.
	    TO = TOTAL of calls Answered or Abandoned.
	      (1) BT+AT=TO
	      (2) BT $\div$ TO = TSF
	
	Calls Time Overflowed and answered by target agents (TOF In Calls), are included in these calculations because TOF In Calls accumulate a Before T (BT) value. However, TOF In Calls do not last in the target queue long enough to accumulate an After T (AT) value.
	
	Calls Time Overflowed from a source ACD DN (TOF-OUT) are not counted in this field, because the TSF factor does not apply to calls answered by the source agent.

ASA (3 digits)	**Average Speed of Answer** This is the average time, in seconds, that each answered ACD call had to wait for an answer, excluding Time Overflow (TOF) In Calls from another queue that were answered by an agent of this queue because an agent of this ACD DN was available before an agent of the source ACD DN was. The ASA value changes because TOF In Calls reflect calls that are answered but *not* accepted by this ACD DN, the target queue of a TOF queue.
# CALLS IN-QUEUE (5 digits)	**Number of Calls in Queue** This is a snapshot of the number of calls awaiting service in this queue, but not yet connected to an agent position. It includes calls in the queue's Time Overflow queue and sent by a CDN with the default treatment.
# POS MANNED	**Number of Manned Positions** The number of agent positions associated with this queue for which the MAKE BUSY lamp is dark.
#POS DCP	**Agents Direct Call-Processing** The number of agent positions currently active on the In Calls key, including those which have the ACD calls on Hold.

Table 9
Ongoing Status Display field descriptions (Part 2 of 2)

Field title	Description
# POS PCP	**Agents Post Call-Processing** Snapshot of the number of agent positions currently in Not Ready state.
# POS WTG	**Positions Waiting** Snapshot of the number of agent positions currently available to receive an incoming ACD call.
# POS NON-ACD	**Positions on Non-ACD Calls** Snapshot of the number of agents active on a key other than the In Calls key.
# VIRTUAL CALLS QD	**Number of Virtual Calls Queued** The number of Source Time Overflow, Call Request Queue, and CCR calls in queue. Virtual calls include Timed Overflow, Enhanced Overflow, and Customer Controlled Routing calls.

Table 10
CCR Ongoing Status Display field descriptions

Field title	Description
TSF (3 digits)	**Telephone Service Factor** The percentage of CCR calls in controlled mode that were answered or abandoned before the TSF threshold.
ASA (3 digits)	**Average Speed of Answer** The average speed of answer for the calls that entered this CDN and were answered through the controlled operation.
#CALLS IN QUEUE (5 digits)	**Number of calls in queue** This reflects the total controlled CDN calls in the system that originated from this CDN. Refer to the Note below.

Note: If an abnormal condition occurs (for example, the link going down), new calls are diverted to the default ACD DN. If this happens, the CDN still appears on the on-going status report, but the #CALLS IN QUEUE field for the CDN does not increment until a Stan Up message is received from the CCRM application module.

The #CALLS IN QUEUE field for the ACD DNs does not include the CCR calls. CCR calls are calls that are queued to an ACD DN by a "Queue To" command from the CCRM application module. The TSF and ASA fields include the CCR calls only if they were answered by agents of this ACD DN. The #CALLS IN QUEUE field for the CDN increments when calls enter the CDN and are controlled by the CCRM application.

> Asterisks appear in the # VIRTUAL CALLS QD field because a CDN cannot have virtual calls queued to it. In this figure, all fields shown with asterisks do not apply for CDNs.

Figure 11
CCR Ongoing Status Display field description for CCR CDN (5555)

ACD DN	TSF	ASA	#CALLS IN QUEUE	#POS MANNED	#POS DCP	#POS PCP	#POS WTG	#POS NON-ACD	#VIRTUAL CALLS QD
2222	100	2	5	1	0	1	0	0	0
5555	46	50	10	****	****	****	****	****	****

Short Reports

A short report prints after an agent logs in to an agent position occupied earlier in the reporting period by another agent. The report contains the statistics accumulated for the old agent before the move. New statistics **begin** accumulating on the new agent as soon as the move occurs.

Short Reports are also generated when the physical position is moved to another queue (by using the SAPA Load Management Command as described in "Select Agent Position Assignment (SAPA)" on page 20.

An Agent Position Report (indicating a Short Report) is shown in Figure 12. The Short Report prints as agent 15 logs into position 3832 which was previously occupied by agent 11. Note that this report reflects the work performed by agent 11 while occupying this position. The next regularly scheduled Report 4 indicates the work performed by agent 15 during the remainder of the reporting period. The system totals line includes the work performed by agent 11.

Figure 12
Report 4 - Short Report

POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFER IDN	# XFER ACD	BUSY TIME	MANNED TIME	AGTID Q/P
ACD DN 8901													
3832	8	152	12	20	0	0	0	0	0	2	1865	2403	11A

Note: Letters indicate how the agent position was changed:
A = Agent log out/log in
P = Agent's priority changed using SAGP/LAGP command
Q = Agent moved to new queue using SAPA/LAPA command

Enhanced daily totals

The customer can schedule cumulative Enhanced Reports 1, 2, 3, and 4 for
the end of each daily period. The report format is the same as that for the
hourly/half-hourly reports, but the averages and totals reflect a twenty-four
hour period, defined by start and end times. A start and end time of 0 hours
permits reports to be printed at midnight. The system total line of statistics is
included in each daily report.

For Report 1, the fields DN CALLS, BUSY TIME and MANNED TIME
show the total of all the individual reports (total number of DN calls and total
of AVG and MANNED times). The # XFER IDN and ACD fields reflect
totals, as in other scheduled reports. The other fields are the averages of the
information on all of the individual reports, except for ABANDONED AVG
WT and TSF. The latter fields are the averages of all the individual reports.

For Report 3, if the DN Expansion package is included, the "ROUTE CODE"
field is 3 spaces larger. The result is more than 80 columns are in each report.
For both situations, the reports are not completely shown if the printer is an
80 character printer. Figures 12 through 17 show typical report formats.

The senior supervisor can issue two commands are to see daily and system
totals. The commands are DTOT (Daily Totals) and STOT (System Totals).
Refer to *Automatic Call Distribution ACD management reports*
(553-2671-102).

DTOT This command, followed by the desired report number (1, 2, 3 or 4),
presents a Daily Totals report on the senior supervisor's terminal. Statistics
shown in the reports are those accumulated since the beginning of the current
daily period to the current time and include system totals for each requested
report. If an initialization occurs in the reporting period, an INI00 message is
presented preceding the DTOT report. The command format is:

DTOT X

Legend:

X = Report number (1, 2, 3, or 4)

After the ACD report for Report 2 is printed, a new CDN report is appended
to the end of the ACD Report 2.

STOT This command, followed by the desired report number (1, 2, 3 or 4), presents a System Totals report on the senior supervisor's terminal. Statistics in the report(s) are those accumulated since the last hourly/half-hourly report. If an initialization occurred in the reporting period, a message is presented before the STOT report. The command format is:

STOT X

Legend:

X   = Report number (1, 2, 3 or 4)

After the ACD report for Report 2prints, a new CDN report is appended to the end of the ACD Report 2. For information about the Time Overflow feature, see "Time Overflow threshold (TLDD)" on page 29.

> ***Note*** 3: If the ACD Report Control feature is enabled and reports for all ACD DNs are turned off, the only report printed is Report 3, Trunks.

Tables 11 through 13 provide a description of the new data fields contained in the Enhanced Reports feature available in X11 release 12 and later software packages.

Table 11
Enhancements to reports REPORT 1: Agent Group Report added field description

Field title	Description
# XFER IDN # XFER ACD (4 digits each)	**Number of Calls Transfer/Conference** This is a two part field that is added in X11 release 12. The # XFER IDN count is the sum of all the calls that the agent transferred or conferenced while on an active IDN call. The # XFER ACD count is the sum of all the calls that the agent transferred or conferenced while on an active ACD call. Prior to X1 1 release 12, transferred or conferenced calls were included in the DN CALLS column.

Table 12
Enhancements to reports REPORT 3: Trunk Routes Report, modified field description

Field title	Description
NO-OF-TRK WORK HPR (4 digits each)	**Number of Trunks** This statistic shows a snapshot of the numbers of trunks working, and priority setting at the time of report generation: — WORK: The number of trunks, including non-ACD trunks, that are currently enabled. — HPR: The number of trunks currently given priority. (See Note 1.)
ALL-TRK-BUSY PEG TOTAL LONG (4 digit) (5 digit) (4 digit)	**All Trunks Busy** This statistic shows the All Trunks Busy (ATB) information of the ACD Routes and the Interflow Trunk Routes at the time of report generation: — PEG: The ATB peg count of the route. — TOTAL: The total duration of the ATB condition of the route in seconds. — LONG: The longest ATB duration of the route.
INTERFLOW ROUTES	**Interflow Trunk Routes** These statistics show the Inter-flow route activity. (See Notes 2 and 3.)
RAN ROUTES	**RAN Trunk Routes** These statistics show the RAN route activity. To enable the RAN reporting for a specific RAN route, the RACD (LD16) for that RAN route must be set to YES. If it is set to NO, the statistics for that RAN route are not printed. (See Notes 2 and 3.)

Note *1:* The ASSN field has been removed from under NO-OF-TRUNKS. The OUT CCS field is also removed from this report.

Note 2: Some fields are not supported. These fields are indicated by ". . ."

Note 3: Interflow trunk routes are defined in Service Change LD14 when the prompt RACD = YES.

Note 4: If a trunk busy condition exists beyond a single reporting period (for example it begins during period 1 and is still busy during period 2) that condition may be pegged for both periods. The **ATB** count may differ slightly from the other peg totals.

Table 13
Enhancements to reports REPORT 4: Position Report added field description

Field title	Description
# XFER IDN **#** XFER A C D (**4** digits each)	**Number of Calls Transfer/Conference** This is a two part field that is added in X11 release 12. The # XFER IDN count is the sum of all the calls transferred or conferenced that were originated by the agent while on an active IDN call. The **#** XFER ACD count is the sum of all the calls transferred or conferenced that were originated by the agent while on an active ACD call. Prior to **X11** release 12 transferred or conferenced calls were included in the DN OUT column. When the Total (TOT4) option is enabled, the BUSY TIME field is eliminated to allow room for this column. The time associated with the call is displayed in the OUT TIME field.

Beginning with X11 release 18, the Daily Totals Report separates IVR statistics and CDN reporting changes. The print format is the same as that of the regular reports. The daily report data reflects the totals and averages **of** the data accumulated over the daily reporting period

Daily system totals

A line of statistics prints at the bottom of each report, showing system totals for all report data for all ACD DN/Pos ID in a customer's ACD operation.

A few of the report data items do not have system totals, or have system totals expressed in different units from those of the individual fields. The discrepancies between individual fields and total fields are listed by report:

Report 1 Agent Group The number in the ACD DN field reflects the total number of ACD DNs. Data for the AVG AGTS field does not appear as it represents a customer decision, not ACD group performance.

Report 2 Call Queue The number shown in the ACD DN field reflects the total number of ACD DN.

CDN statistics are appended to the end of Report 2, and have a different header. The CDN reports detail the treatment for all calls that enter the CDN. For detailed information on this report, refer to Table 4, "REPORT 2: CDN appendix," on page 58.

Report 3 Trunk Routes Tlne numbers reflect total number of trunks reported on the system. Report fields include the ROUTE CODE that shows all trunks that auto-terminate on all customer ACD DNs, Interflow Routes, and the RAN Routes.

Report 4 Agent Position The number shown in the Pos ID field represents the total number of Pos IDs in the customer's operation. Data for the INC TIME, OUT TIME, BUSY TIME, and MANNED TIME fields is expressed in minutes. The other fields are expressed in seconds. The system totals for all total fields are expressed in minutes, while the system totals for all average fields are expressed in seconds. The AGT ID field is not reported as it would show the same total as the Pos ID.

STOT This command, followed by the desired report number (1, 2, 3 or 4), presents a System Totals report on the senior supervisor's terminal. Statistics in the report(s) are those accumulated since the last hourly/half-hourly report.

Figure 13
Format of a typical periodic totals report (XI 1release 9)

ACD 001   1899 02 01

REPT 1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	TOTAL DCP	TOTAL HDCP	TOTAL PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	AVG TIME BUSY	POSN MANNED
8901	0	7		4	20	18	20	73	0	****	138	646
8902	0	4	1	27	27	0	27	134	0	****	110	646
8903	0	1	14	2	400	398	400	246	0	****	400	646
3		12	4	11	447	42	54	107	0	****	216	646

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED No	AVG. WT	TSF	OVER FLOW	INTER FLOW	DELAY ANN 1ST	2ND	THRESHOLDS CWTH	BVTH	OVTH
8901	3	3	0	0	****	100	0	0	0	0	2	2	4
8902	4	0	2	0	****	100	0	0	0	0	2	2	4
8903	14	0	14	6	13	100	3	0	5	1	3	2	4
3	21	3	16	6	13	100	3	0	5	1	7	6	12

REPT 3

ROUTE CODE	NO. OF TRUNKS ASSN	WORK	HPR	INC CALLS	INC CCS	OUT CALLS	OUT CCS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T
DID-721	2	1	0	2654	0	0	0	2	0	0	3
TIE-728	1	1	2	123	2	2	1	0	2	3	2
2	3	2	2	2777	2	2	1	2	2	3	5

Figure 14
Format of a typical periodic totals report (X1 1 release 10)

ACD 001   1899 02 01

REPT 1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	TOTAL DCP	TOTAL HDCP	TOTAL PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	AVG TIME POSN BUSY	MANNED
8901	0	7	****	4	20	16	20	73	0	****	138	646
8902	0	4	1	27	27	0	27	134	0	****	110	646
8903	0	1	14	2	400	398	400	246	0	****	400	646
3		12	4	11	447	42	54	107	0	****	216	646

REPT 2

ACD DN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED No	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW	DELAY 1ST	ANN 2ND
8901	3	3	0	0	****	100	7	0	0	0	0	0
8902	4	0	2	0	****	100	0	0	0	0	0	0
8903	14	0	14	6	13	100	0	7	3	0	5	1
3	21	3	16	6	13	100	7	7	3	0	5	1

REPT 3

ROUTE CODE	NO. OF TRUNKS ASSN	WORK	HPR	INC CALLS	INC CCS	OUT CALLS	OUT CCS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T
DID-721	2	1	0	2854	0	0	0	2	0	0	3
TIE-728	1	1	2	123	2	2	1	0	2	3	2
2	3	2	2	2777	2	2	1	2	2	3	5

Figure 15
Format of a typical periodic totals report (X1 1 release 12)

REPT 1   ACD 001   1899 02 01

ACD DN	AVG AGTS	CALLS ANSWD	ASA	TOTAL DCP	TOTAL HDCP	TOTAL PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	# XFER IDN	ACD	AVG TIME BUSY	POSN MANNED
8901	0	7	****	4	20	16	20	73	0	****	1234	34	138	646
8902	0	4	!	27	27	0	27	134	0	****	32	198	110	646
8903	0	!	14	2	400	398	400	246	0	****	12	16	400	646
3		12	4	11	447	42	54	107	0	****	1278	248	216	646

REPT 2

ACD DN	CALLS ACC-PTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED No	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW	DELAY 1ST	ANN 2ND
8901	3	3	0	0	****	100	7	0	0	0	0	0
8902	4	0	2	0	****	100	0	0	0	0	0	0
8903	14	0	14	6	13	100	0	7	3	0	5	!
3	21	3	16	6	13	100	7	7	3	0	5	!

REPT 3

ROUTE CODE	NO. OF TRK WORK	HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T	ALLTRK BUSY PEG	TOTAL	LONG
DID-721	!	0	2654	0	0	2	0	85	IO	3	IO	6
TIE-728	!	2	123	2	2	0	2	219	10	2	8	5
2	!	2	2777	2	2	2	2	304	20	5	0	0

INTERFLOW ROUTES

ROUTE CODE	NO. OF TRK WORK	HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T	ALLTRK BUSY PEG	TOTAL	LONG
TIE-726	16	0	60	4	IO					!	3	3
TIE-733	20	0	30	2	28					0	0	0
2	36	0	90	6	38	"	,,,,,,,,			!	0	0

REPT 4

POS ID	CALLS ANSWD	TOTAL DCP	TOTAL HDCP	TOTAL PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFER IDN	ACD	BUSY TIME	MANNED TIME	Q/AGT ID
ACD DN 8901														
32	7	4	13	16	73	0	0	0	0	1234	34	138	646	4545
ACD DN 8902														
20	4	27	24	0	134	0	0	0	0	32	198	110	646	2222
ACD DN 89 03														
45	!	2	29	398	246	0	0	0	0	12	16	400	646	1313
3	12	11	66	42	107	0	0	0	0	1278	248	11	32	

Figure 16
Format of a typical periodic totals report (X1 1 release 16)

ACD 001   1899 02 01

REPT 1

ACD DN	AVG AGTS	CALLS ANSWD	ASA	TOTAL DCP	TOTAL HDCP	TOTAL PCP	AVG WORK	AVG WAIT	ON CALLS	AVG TIME	# XFER IDN	ACD	AVG TIME BUSY	POSN MANNED
8901	0	7	****	4	20	16	20	73	0	****	1234	34	138	646
8902	0	4	1	27	27	0	27	134	0	****	32	198	110	646
8903	0	1	14	2	400	398	400	246	0	****	12	16	400	846
3		12	4	11	447	42	54	107	0	****	1278	248	216	646

REPT 2

ACD DN	CALLS ACC-PTED	RECALL TO SOURCE	ANSWERED LONGEST WT. TIME	ABANDONED No	AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW/ BUSY	DELAY 1ST	ANN 2ND
8901	3	3	0	0	****	100	7	0	0	201	0	0
8902	21	0	2	0	****	100	0	0	0	10B	0	0
8903	14	0	14	6	13	100	0	7	3	0	5	1
3 PT3		3	16	6	13	100	7	7	3	201 10B	6	1

RE

ROUTE CODE	NO. OF WORK	TRK HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	AFT-T	ANSWERED BEF-T	AFT-T	ALL TRK BUSY PEG	TOTAL	LONG
DID-721	1	0	2854	0	0	2	0	85	10	3	10	6
TIE-728	1	2	123	2	2	0	2	219	10	2	8	5
2	1	2	2777	2	2	2	2	304	20	5	0	0

INTERFLOW ROUTES

TIE-726	16	0	60	4	10	. . . .				1	3	3
TIE-733	20	0	30	2	28	,,,,,,,,,,,,,,,,,,,,,,				0	0	0
2	36	0	90	6	38	,,,,,,,,,,,,,,	,,,,,,,,,, ,,,,			1	0	0

REPT 4

POS ID	CALLS ANSWD	TOTAL DCP	TOTAL HDCP	TOTAL PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFER IDN	ACD	BUSY TIME	MANNED TIME	Q/AGT ID
ACD DN 8901														
32	7	4	13	16	73	0	0	0	0	1234	34	138	646	4545
ACD DN 8902														
20	4	27	24	0	134	0	0	0	0	32	198	110	646	2222
ACD DN 89 03														
45	1	2	29	398	248	0	0	0	0	12	16	400	646	1313
3	12	11	66	42	107	0	0	0	0	1278	248	11	32	

Figure 17
Format of a typical periodic report (X11 release 17) (Part 1 of 2)

ACD 001   1899 02 01

REPT 1

ACD IN	AVG AGTS	CALLS ANSWD	ASA	AVG DCP	AVG PCP	AVG WORK	AVG WAIT	DN CALLS	AVG TIME	#XFER IDN	#XFER ACD	AVG TIME BUSY	POSN MANNED
3900	2	11	14	47	171	218	37	4	16	1	1	1252	1455
3900	1	12	3	42	17	59	89	1	11	0	1	726	1800
6788	1	3	20	29	0	29	436	0	****	0	0	86	1394
3989	0	0	****	****	****	****	****	0	****	0	0	*****	*****
4		26	11	43	80	123	107	5	15	1	2	829	1526

REPT 2

ACD IN	CALLS ACCPTED	RECALL TO SOURCE	ANSWERED LONGEST WT.	ANSWERED TIME	ABANDONED No.	ABANDONED AVG. WT	TSF	TOF IN	TOF OUT	OVER FLOW	INTER FLOW
3900	17	0	46		3	26	64	0	3	5	3B
3900	14	4	9		1	14	100	3	0	0	2I
6788	3	0	30		0	****	33	0	0	1	0
3989	0	0	0		0	****	0	0	0	0	0
4	34	4	48		4	23	76	3	3	6	2I 3B

CDN	CALLS ACCPTED	CALLS ANSWERED NO	ASA	LONG WT	N	ABANDONED O	AVG T	TSF	ROUTE TO	DISC	BUSY	DFLT DN
6800	7	0	****	0	0	0	*****	0	0	0	0	7
6801	15	6	27	30		2	10	25	7	0	0	0
6802	3	0	****	0		0	****	0	0	0	3	0
3	25	6	27	30		2	10	25	7	0	3	7

REPT 3

ROUTE SODE	NO-OF-TRK WORK	HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	ABANDONED AFT-T	ANSWERED BEF-T	ANSWERED AFT-T	PEG	ALLTRK BUSY TOTAL	ALLTRK BUSY LONG
TIE-72i	240	0	446	472	0	8	7	325	23	0	0	0
co-711	48	0	1051	1244	0	9	0	959	17	0	0	0
2	288	0	1499	1716	0	17	7	1284	40	0	0	0

INTERFLOW ROUTES

	NO-OF-TRK WORK	HPR	INC CALLS	INC CCS	OUT CALLS	ABANDONED BEF-T	ABANDONED AFT-T	ANSWERED BEF-T	ANSWERED AFT-T	PEG	ALLTRK BUSY TOTAL	ALLTRK BUSY LONG
TIE-720	119	0	441	472	213	....	,,,,,,,,,,,,,,,,			6	202	68
1	119	0	441	472	213		. . . ,,,,,,,,			6	3	1

RAN ROUTES

	NO-OF-TRK WORK	HPR	INC CALLS	INC CCS
RAN-789	3		22	2
RAN-792	2	0	1	

Figure 17
Format of a typical periodic report (X1 1 release 17) (Part 2 of 2)

2		5		23	2	....							....
REPT 4													
POS ID	CALLS ANSWD	AVG DCP	AVG PCP	AVG WAIT	DN INC	INC TIME	DN OUT	OUT TIME	# XFEA IDN	# XFEA ACD	BUSY TIME	MANNED TIME	AGTID Q/P
ACD DN 8900													
4330 01	7	57	182	30	2	54	0	0	0	0	1588	1800	9999
6805 01	4	3-	198	49	2	34	-	9	1	1	916	1110	7777
ACD DM 9900													
4335 04	12	42	17	89	1	14	0	8	0	1	726	1800	8888
ACD DN 6788													
6810 01	3	29	0	436	0	0	0	0	0	0	86	1294	6666
ACD DN 8989													
4	26	43	80	107	5	2	0	0	1	2	55	102	

SL-1

Automatic Call Distribution

ACD management commands and reports

**northern
telecom**

SL-1
Network ACD
Description and operation

AtoZ KELLATRONICS, INC.

tel: 800.766.3425	fax: 800.720.1172
818.773.8888	818.773.8899
www.kellatronics.com	info@kellatronics.com

Revision history

December 20, 1989

Standard, release 1 .0. Reissued for compliance with Northern Telecom
standard 164.0 and to include updates for Xl] release 15.

December 1, 1991

Standard, release 2.0. Reissued to include technical content updates. Service
change and system error message information has been removed from this
document. Refer to *X1] input/output guide* (553-3001-400) for this
information. Due to the extent of changes, revision bars are omitted.

December 31, 1992

Reissued to include updates for Xl] release 18. Changes are noted with
revision bars in the margins.

August 1, 1993

Reissued to include updates and new information. Due to the extent of
changes, revision bars are omitted.

Contents

List of figures

List of tables

1

General information

Enhanced Overflow (EOVF) vastly expands the operations for overflow queues and target queues within an existing Automatic Call Distribution (ACD) switch. The Enhanced Overflow package can operate in any existing ACD application.

Network ACD supports ACD functions over an Integrated Service Digital Network (ISDN). All the requirements for ISDN are required for Network ACD.

This is a descriptive and administrative publication for the Enhanced Overflow feature and Network ACD. Xl I release 15 is required as the minimum for this feature and is only supported on the following machine types.

— SL- 1 ST, STE, NT, RT, XT

— Systemoptions 11, 21, 21E, 51, 61, 71, 81

Before using this document, you must have a working knowledge of both ACD and Integrated Service Digital Networks. Refer to the publications listed in this section for related background information.

This overview is presented as an introduction to the Network ACD application. Details for the administration and operation of the features are covered later in this document.

Enhanced Overflow (EOVF) allows increased Target ACD Directory Numbers (DNs) from 6 to 100 within the existing Time Overflow (TOF) feature application. As a stand alone feature, it only works in local applications. EOVF alone does not provide network services, but is prerequisite for Network Automatic Call Distribution (NACD).

Network ACD provides ACD capabilities over an Integrated Services Digital Network (ISDN). An NACD system distributes ACD activities between several sites. Connected by ISDN voice and data services, different sites can be physically or geographically separated within the network.

System operations and call overflows are transparent to the caller. The ACD Agents notice some display changes; however, ACD Supervisors and system technicians must be aware of the configuration and operation of NACD to properly support the application for a customer.

With EOVF and NACD enabled and supported in the network, calls can be serviced as shown in the example for Figure 1.

Source Queue is a queue that has target queues assigned, and makes outgoing calls.

Target Queue is the queue that the calls come into.

Figure 1
High level overview of Network ACD

Incoming calls from the public network are first received at a Source node. Depending on network configuration, calls are diverted to Target nodes which can be external to the Source node at separate geographic locations.

553-1837
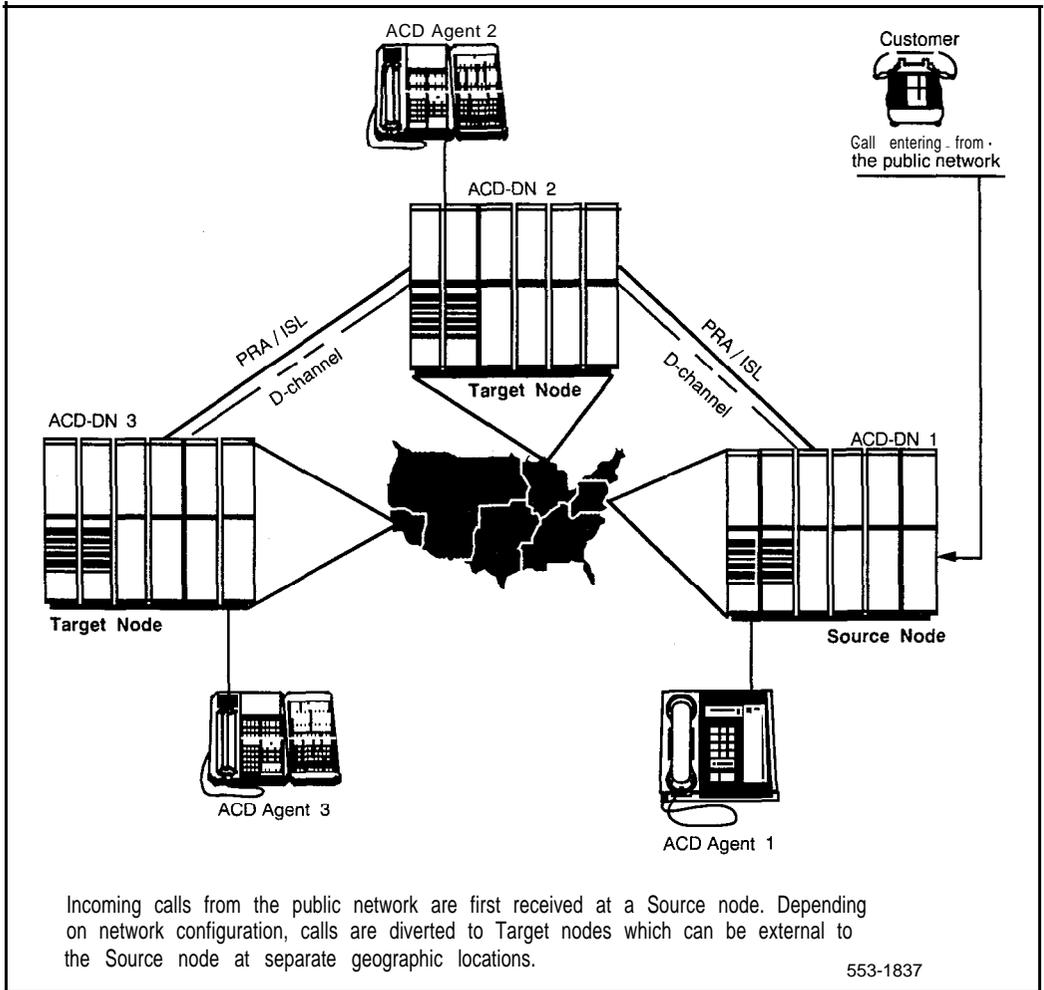
Enhanced   Overflow

Enhanced Ovefflow (EOVF) allows a maximum of 20 of Target queues for each Source ACD DN.

Enhanced Overflow (EOVF) defines local Target queues for each Source ACD DN. EOVF diverts incoming calls from an overloaded ACD DN to Target ACD DNs (like Time Overflow) which are local to the Source ACD DN.

Enhanced Overflow enhances Time Overflow (TOF) operation to increase the number of ACD DNs serviced by a Target from 6 to 100. That is, with the EOVF package, any particular ACD DN configured as a Target can accept calls from up to 100 other ACD DNs on the same switch.

Diverting calls from the Source ACD DN to the appropriate Target ACD DN is controlled by Routing Tables configured in software LD23, with related timers and threshold values. Engineering for these tables is described later in this document.

A source can define 20 targets. A target can have an unlimited number of targets. The range is:

— T O F   **2** to 1800 seconds

— E O V F   0 to 1800 seconds

Table 1
Time Overflow versus Enhanced Overflow

	Timers	Number of Targets	Number of Sources	Night mode supported
Time Overflow (TOF)	2 to 1800 seconds	3 Must be the same targets as overflow by count	6	n o
Enhanced Overflow (EOVF)	0 to 1800 2 seconds	0 Does not have to be the same targets as overflow by count	no limit	yes

Network ACD overview

Environment

The Enhanced Overflow (EOVF) (package 178) is required to support
Network ACD (NACD). Network ACD (package 207) allows ACD
functionality between physically separated locations in a multi-node
Meridian 1 network. This allows ACD Agent Groups at different locations
(nodes) to service calls over the network at remote targets, independent of
where the call first entered the network. Network ACD uses ISDN D-channel
messaging to exchange information between nodes.

NACD on a 911 application

If the incoming route is set up with CPDC = YES and they use CDP to direct
the call to queue 2 without using NACD, the call will go to queue 2. For a
NACD application, CPDC must be set to NO.

Call Processing

Like EOVF, Network ACD allows target queues to be defined for Source
ACD DNs. Network ACD can define Source and Target queues for each
ACD DN. NACD diverts incoming calls from an overloaded ACD DN to
Target ACD DNs (like EOVF) which can be local or remote to the Source
ACD DN. Local Targets are on the same node as the Source ACD DN, and
remote Targets are at a different node.

Diverting calls in NACD is controlled by Routing Tables with timers. Calls
diverted by NACD can be answered by the Source ACD DN or any one of up
to 20 Target ACD DNs. By using ISDN D-channel messaging to queue Call
Requests at remote Target ACD DNs, voice calls are not physically diverted
until an idle Agent is reserved for that call at the remote Target node. If no
trunks are available, a call doesn't go across the network. If trunks are
available, the agent is reserved until the timer expires.

Refer to "Designing the NACD Routing Table" on page 51.

When the target timer expires and there are no idle agents available at the Source node, NACD software sends a Call Request over the ISDN D-channel to a defined Target ACD DN. An idle Target agent is matched with an individual Call Request. That Target agent is reserved for that call, and the Target node responds through the D-channel with an Agent Free notification. When the Agent Free notification is sent, the agent is reserved and a customer defined Reserve Agent Timer starts. Only after receiving the Agent Free notification does the NACD Source node physically divert the voice call to the Target ACD DN. When reserved, an agent is not available to receive ACD calls from any other queue.

The Reserve Agent Timer (RAGT), as configured in CD 23, prevents an agent from being reserved indefinitely and be unavailable for calls. A timer countdown is shown on the agent's Digit Display if desired. If the call is not presented before the timer expires, the agent is returned to the Idle Agent queue and the call remains inplace in place in the Source queue.

There are some situations that can change an agent's reserved status or cancel a Call Request, which are described later in this document.

Call Request queue

Target ACD DNs have an additional queue created to handle incoming NACD traffic- the Call Request queue. Logical Call Requests (not physical calls) are queued in the Call Request Queue for the Target ACD DN, until an Agent is available.

Engineering

Operating parameters for NACD must be carefully engineered for proper functioning. To interact with supporting systems, this feature requires certain configurations. In order to protect other feature operations, some precautions are suggested in the section on NACD engineering.

This section also contains a list of all hardware and software requirements for Networking ACD applications. Be sure to read this entire section before starting to implement NACD.

This feature requires ISDN to already be active between the sites enabled for NACD. Take special note of the sections in this document that address Package requirements, Feature engineering, and Feature interactions.

Network ACD is a separate package from the ACD packages. Refer to the Engineering section for a complete list of the package dependencies involved.

Dialing plan configuration is critical to NACD operation. See "NACD engineering guidelines" on page 40.

Management reports

Package C for ACD provides reports to assist ACD Supervisors with Agent and traffic statistics. Although no new fields are introduced in the output reports, the reports are changed by circumstance because calls are presented or received at potentially diverse locations. Supervisors must be aware of network operations, because the values presented in the Supervisor's display are affected by NACD.

Details for changes to Management reports are covered under the section on Operations in this document. See "Management reports" on page 67.

ISDN overview

Integrated Service Digital Networks (ISDN) use a standard protocol to transport both call related and non-call related messages to other nodes.

Network ACD uses ISDN D-channel messages to transport call information between the Source node and the remote Target queues. ISDN services allow the messaging between nodes required for Call Requests, cancellation and set-up messaging described later in this document. Source and Target nodes can be connected through tandem switches, they do not need to be connected point-to-point.

Primary Rate Interface (PRI)

The ISDN PRI architecture is composed of protocol layers providing different services. There are three supporting layers:

Layer 1	Physical layer
Layer 2	Link layer
Layer 3	Network layer

These layers provide a standard interface for voice and data communication. Each layer uses the services provided by the layer below, and builds on these services to perform functions for the layer above. This layered approach splits complex protocols into easily managed blocks. Each layer or block can be modified without affecting the protocols in another layer.

D-channel

Within an ISDN environment, call control is supported out-of-band over the D-channel. The D-channel transports call control information.

Each D-channel can support up to 383 B-channels for voice transmission. Each system can support up to eight D-channels. For installation and engineering details, be sure to review the ISDN documents listed in this section.

ISDN Signaling Link (ISL)

ISDN Signaling Link (ISL) provides the capability to replace both digital and analog conventional trunk signaling with out-of-band ISDN D-channel signaling. ISL supports Tie and ISA trunk types with Meridian 1 to Meridian 1 connectivity.

There are two modes of ISL operation:

— **Shared mode** configuration is basically the same as the PRI D-channel also supporting ISL trunks.

— **Dedicated mode** the D-channel interface is reserved for ISL use.

An ISA route must be established and identified with the dedicated or shared ISL interface. For a complete description of the ISL operating parameters, refer to the
(553-2901-100).

Supporting documents

Network ACD (NACD) uses more than one special feature from the Xl 1 software packages. Of the publications listed here, you should have all of the ISDN and ACD publications relative to your application environment.

ACD

Automatic Call Distribution (ACD) allows a large number of incoming calls to the same directory number (called the ACD DN) to be answered at Agent Positions that share the influx of calls equally. The Automatic Call Distribution (ACD) system is fully described in the documents listed below:

- *Automatic Call Distribution basic features description* (553-2671-100)

- *Automatic Call Distribution ACD management reports* (553-2671-102)

ISDN

Network ACD is dependent on the network services and transport provided by ISDN. The ISDN network should already be up and running before loading the NACD package. Therefore, you should already have the following publications on hand:

- *ISDN Primary Rate Interface description and administration* (553-2901-100)

- *ISDN Primary Rate Interface installation* (553-2901-200)

- *ISDN Primary Rate Interface maintenance (553-2901-500)*

System support documents

This networking feature requires that the system have a specific configuration. The documents listed here provide background information supporting that configuration:

Dialing Plans

- *Automatic Number Identification description* (553-2611-200)

- *Basic and Network Alternate Route Selection description* (553-2751-100)

- *Coordinated Dialing Plan description* (553-2751-102)

Electronic Switched Networks (ESN)

- *Electronic Switched Network description* (309-3001-100)

- *Electronic Switched Network signaling guidelines* (309-3001-180)

- *Electronic Switched Network transmission guidelines* (309-3001-181)

Functional description

Network environment

NACD employs ISDN D-channel as the vehicle for transport to send NACD call related messages between sites. Refer to the ISDN NTPs listed under "Supporting documents" on page 9 for a complete description of channeling speech paths.

Only PRI/ISL and Tie trunks can be used for Network ACD.

Proper routing requires the dialing plan to identify ACD DNs on different nodes. This function is handled by the Electronic Switched Network (ESN). All nodes on the network must use the same dialing plan: either CDP or VDP. Both plans cannot be used within a single network. Refer to the section on Engineering in this document.

The D-channel is also used to update the data bases at Source and Target nodes. Making new entries in the data base triggers a D-channel message to query the far-end for verification, before allowing the entry to be registered. When you update your Routing Tables, the system checks the ACD DN address at both ends before allowing the entry to be registered.

D-channel messages also keep the system updated on the operating status of different ACD DNs at separate locations. Source and Target ACD DNs can be local or remote, and Active or Closed. Local Targets are on the same node as the Source ACD DN, and remote Targets are at a different node. An Active status allows the remote Target ACD DN to receive NACD calls. Closed means the remote Target ACD DN is not available to receive NACD calls.

Routing Tables

The ACD DN at a Source node is called the Source ACD DN. The Source ACD DN is always used for routing ISDN messages over the D-channel.

Targets in each table are put in order by the system according to the Target timer value, from the lowest value to the highest value. The timer associated with each Target is used to decide when to issue a Call Request to that Target. The table entries can be entered in any order, and the Table is automatically reordered when timer values are changed. If all the timer values are the same, the entries are listed in the order they are entered.

Network ACD uses Routing Tables for the Source ACD DN to direct calls to potential Target ACD DNs. Up to 20 different Targets can be defined for each Source ACD DN. Each Target can have an individual timer defined, from 0 to 1800 seconds. Routing Tables each entry = Target ACD DN, an associated timer, and status information for the target. The Targets in each routing table can be either local or remote.

The Routing Table information is used to determine when and where calls are diverted from the Source ACD DN, to Target ACD DNs. There are two types of Routing Tables: Day Tables and Night Tables. The Day Table is used when the Source ACD DN is Day mode. The Night Table is used when the Source ACD DN is in Night mode.

Calls not allowed to be diverted by NACD are listed here:

- calls with ACD Ring Again activated
- Call Park Recall calls
- calls active in Teleset Messaging
- calls without Disconnect Supervision

Day Tables The Day Table is used when the Source ACD DN is in Day mode. Targets in the Day Table are used independent of the Ovefflow by Number targets (OVDNs). They can be the same Targets, but they must be redefined in the routing table. If no Day Table is defined, then TOF (if enabled) operates as usual.

When a call exceeds the defined timer for a Target in the Day Table, the call remains in the originating queue, and a Call Request is sent to the Target Overflow (TOF) queue. If the call has overflowed by number to a Target queue, and the Target timer expires, the call is returned to the Source TOF queue.

These calls are not allowed to access the Day Table:

— Call Park Recalls

— ACD Ring Again calls

— Virtual calls (CCR, IVR)

While the ACD DN with this call is in Day Service, the call is monitored to see if it exceeds any other related timers.

Night Table The Night Table provides another night treatment that can be defined for the system. The Night Table is only accessed when an ACD DN is in Night mode.

When the Source ACD DN is in Night mode, the call accesses the Night Table for that ACD DN queue. If there is no Night Table defined, then the Night Call Forward (NCFW) DN is used, if it is enabled.

These calls cannot access the Night Table:

— calls with outstanding Call Requests in the Day Table

— Call Park Recalls

— ACD Ring Again calls

— Callers active in Teleset Messaging

If the Night Table is defined, then Night Call Forward (NCFW) does not apply. An error message is output if anyone uses the NITE command in Load Management. Also, the NCFW prompt will not appear in LD23 if a Night Table is defined.

When a call exceeds the defined timer for a Target in the Night Table, the call remains in the Source ACD DN queue, and a Call Request is sent to that Target. While the Source ACD DN with this call is in Night mode, the call is monitored to see if it exceeds any other target timers. The call is not routed to its TOF queue, but remains in incoming call queue.

Table 2
Example routing table (UDP)

Target ID	Timer value	Registered	Status
66552152	*0*	O K	Active
2108	*250*	Local	Active
64342998	*1800*	<blank>	Closed

Target IDs This number shows the actual digits dialed. For remote target ACD DNs, the dialing plans allowed are as follows:

UDP = <AC> <LOC> <ACD DN>

CDP = <DSC> <ACD DN>

Where:

AC = Access Code

LOC = Location Code

Refer to the section on Engineering in this document for more details on dialing plans.

Timer values This is the timer value associated with each Target ACD DN. This value is rounded off to an even number, and gives the amount of time (in seconds) that a call is queued by the Source ACD DN before a Call Request for this call is sent to the Target associated with this timer.

Registered When a Target ACD DN is entered into the Routing Table, the Source node attempts to register itself with the Target ACD DN. Receiving a positive response from the Target node, indicates that Target ACD DN is registered. A source is registered when the Target ACD DN has been queried and responds to the request.

OK indicates that the source is registered with this Target.

Local indicates that the Target defined is local to the Source node. Registration is not required.

<blank> indicates that if this field is blank, the Target has not accepted the Table entry. There has been either no reply or a negative reply from the Target node: the system is down, the network is down, or the DN is not valid.

Status This field describes whether the Target ACD DN is currently able to answer calls or not able to take NACD calls from the Source.

Active indicates that the Target is active or available to accept NACD calls.

Closed indicates that the Target is closed to incoming NACD calls. This occurs for different reasons:

- current number of Call Requests at the Target exceeds its Call Request Queue size (heavy traffic)
- currently in Night mode

Cascade routing

A Call Request from the Source ACD DN is the first message sent to a Target node to queue the call waiting for the next available agent. The call stays at the Source node receiving the treatments defined for that ACD DN (Music, RAN, etc.).

Network ACD sends out Call Requests to search for an available agent within the system. Only one Call Request is sent at a time, but the system continues to search until an agent is found. That is, while the first Call Request is pending at a Target, the system can send another Call Request for the same call to another Target. Up to 20 Call Requests can be pending at any one time.

If the duration timer (DURT) for a particular Target expires before the call is answered, there may be only 19 Call Requests pending. Then, the system resends the Call Requests to maintain the 20 pending. The Cascade occurs as the Call Requests are issued individually, and the system works through the Routing Table issuing Call Requests to Targets with successively longer timers as illustrated in Figure 2.

Targets are arranged automatically according to increasing timer values. The longer a call waits, the farther down the routing table it goes. That is, Call Requests cascade through the listed Targets looking for an available agent. If the timers for each Target are the same value, then the Targets are listed in the order they are entered into the data base.

As soon as the call is answered, or abandoned, all pending Call Requests are canceled. That is, the system must follow through the process-Call Request, Free Agent notification, Agent Reserve, and Call Presentation (or abandoned) ▬ and then cancels all outstanding Call Requests for that call.

Figure 2
Cascade routing

Target Queues

4

Timer value

10

30 30

40 40

50 50

New
Call

19 - — Current wait time
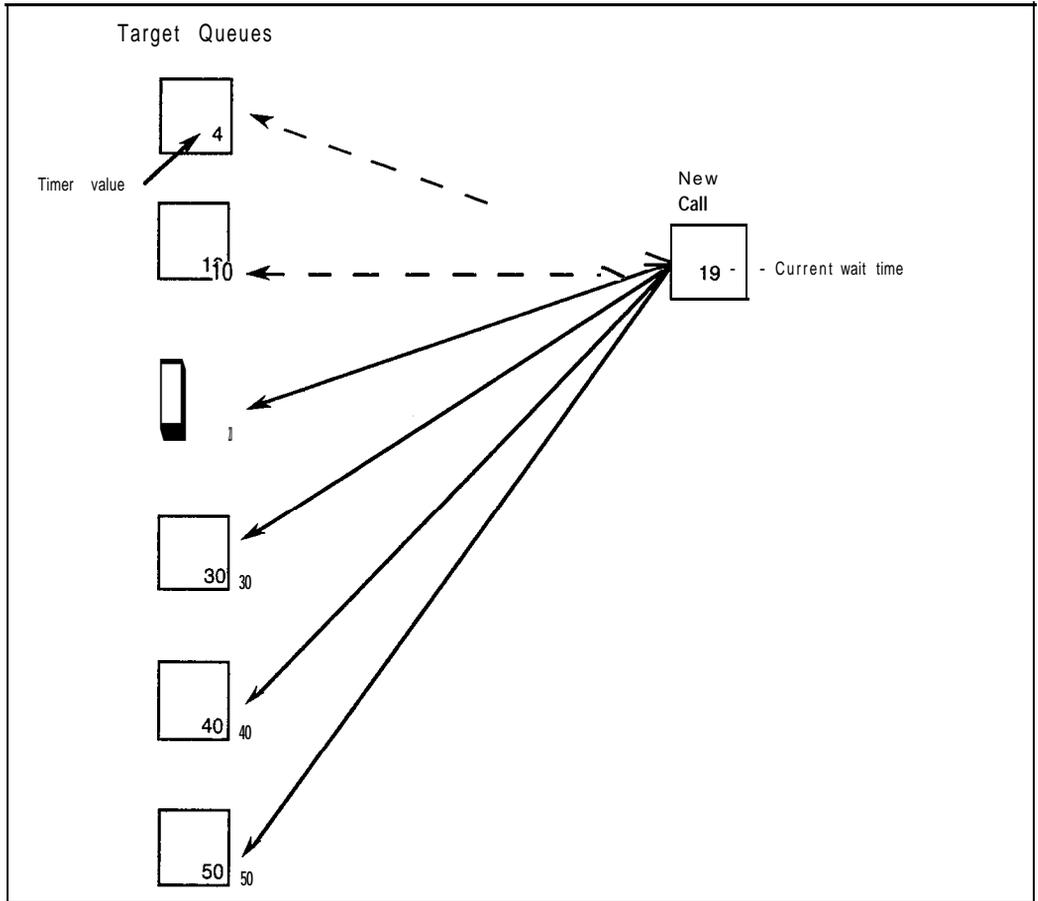
Dynamic status change

Certain events and conditions within the system allow the status for a particular queue to change automatically-a dynamic status change. Conditions that cause the status of a Target ACD DN to change are described below:

- Night Service (NSVC):

    When the Target ACD DN goes into Night Service, the Status automatically changes to Closed at all its Source ACD DNs. As soon as one Agent or Supervisor logs in, the ACD DN is taken out of NSVC, and the Status is automatically changed to Active.

- Traffic volume:

    When calls in the Call Request queue exceed the Call Request Queue Size (CRQS) threshold, the status changes to Closed. The Target ACD DN remains Closed to further network call requests until the calls in queue fall by the Flow Control Threshold (FCTH) *difference.*

    CRQS − FCTH = *difference*

    Example:

    Set these parameters in service change:

    CRQS = 80

    FCTH = 20

    When the queue = 80, the Target is Closed (CRQS = 80)
    When the queue = 60, the Target is Active (CRQS − FCTH = 60)

- Manual Close:

    CRQS = 0

    CRQS can never be lower than the flow control threshold. Setting the CRQS to zero in service change or Load Management closes the queue. The Call Request queue shuts down. When the CRQS is changed to a positive value again, the Target becomes active. The CRQS must be at least the FCTH + 1 on 20 whichever is greater. The maximum value is 255 with a default of 100.

    You can also remove or close the queue by removing that ACD DN from the Routing Table for that time frame (Day or Night).

Incoming calls

Incoming calls to a Network ACD site are initially handled as any other ACD application. That is, incoming calls are queued for presentation to the first available agent.

Call requests

When calls have waited longer than the timer values in the Routing Table, calls can be diverted to Target Agents for call presentation. Targets can be local or remote. Calls which are to be diverted to a remote Target remain in the queue for the Source ACD DN, and the software sends a Call Request over the ISDN D-channel to queue Call Requests at the Target node.

When an agent becomes available at the Target node, that agent is reserved for that particular call. The Target node responds to the Source node with an Agent Free notification over the D-channel. Only after receiving the Agent Free notification is the voice call physically diverted from the Source queue to the Target node and presented to the reserved agent.

Reserve Agent Timer (RAGT) The Reserve Agent Timer keeps the Agent reserved until call presentation or time-out. The timer also prevents a situation where an agent may be reserved indefinitely.

The Reserve Agent Timer is customer defined in service change LD23 (2 – (4) – 30) and Load Management (RAGT). When an agent is reserved with Countdown Allowed (CNTA) CLS defined in LD11, the RAGT countdown is shown on the agent's Digit Display.

The agent being reserved has a Reserve Agent Timer with countdown display. The Countdown display starts when the Reserve Agent Timer (RAGT) starts, and counts down by increments of 2 seconds, to zero. If the call is not presented to the Target Agent before the Reserve Agent Timer (RAGT) expires, that call remains at the originating Source queue. The Target agent is returned to the idle agent queue.

When a call is presented or answered (depending on the display CLS allowed), the Digit Display shows the appropriate call information-dialed DN, DNIS number, CLID, and so on. Diverting the call and system functions show the agent's display to the caller.

CAUTION
Call modification information may be lost.

If the call is transported over a node that does not support the same release or features, certain call information is lost and will not be displayed on the terminating telephone.

When a Target Agent becomes available, the Target node sends an Agent Free notification message to the Source ACD DN. The Agent is removed from the idle agent queue and reserved until the network call is presented. If the timer expires before the call is presented, the agent is returned to the front of the idle agent queue, and the call remains at the Source ACD DN queue. Refer to "Prioirity Agents" on page 29.

Cancelling Call Requests

There are some situations that can change an agent's reserved status or cancel a Call Request, affecting the timer. Agent set key operations can change the status of a station to unreserved. Cancellations for other reasons may be initiated by the Source or Target ACD DNs also.

Source node The Source node cancels Call Requests on the following events:

- Call is answered by any agent or supervisor
- Call is abandoned

Cancellation messages are sent to all remote Target ACD DNs with Call Requests pending for that ACD call.

Target node A T&get ACD DN cancels Call Requests on the following events:

— Duration Timer (DURT) expires

— Reserve Agent Timer (RAGT) expires

Key Operation: An agent activates keys or logs out before the Call Set-up message is received (as in using the NRD/MSB keys).

— Night Service: If a Target ACD DN goes into Night Service, all pending calls in its Call Request queue are cancelled.

Queue priorities

Each Agent answers incoming calls based on the priorities established for that ACD DN. There are three different queue configurations that can be defined for Network ACD.

Oldest Call in Network (OCN) This option takes the oldest call in the network overall. This option requires the Oldest Call in Network (OCN) be enabled, and the High Priority Queue (HPQ) be disabled in LD23:

OCN = YES

HPQ = NO

The system compares calls from queues for that target ACD DN. The highest priority call that has waited the longest is the call presented to the next available Agent.

Own TOF Queue First This option selects the oldest call from the ACD DN's own TOF queue. With this preference, both the Oldest Call in Network option and the High-Priority Queue option should be disabled in LD23:

OCN = NO

HPQ = NO

If there are no calls in the Source Timed Overflow queue, the system looks at calls in the Call Request queue and Source Timed Local Flow-in queue. If there are no calls in either of those queues, then calls in the High-priority queue and non-priority queues are routed next. Calls for a Target ACD DN are best answered by the Agents for *that* ACD DN. With this configuration, calls are first selected in the following order:

1   The oldest call in the Agent's own TOF

2   The oldest High-priority call in the Call Request queue, or Local Flow-in queue.

3   High-priority   calls

4   Non-priority   calls

Own TOF and High Priority Queue over the Network This option presents calls from the Agent's own TOF queue and High-priority queues before presenting calls from Source TOF queues and Call Request queues.

With this preference, the Oldest Call in Network option should be disabled and the High-Priority Queue option should be enabled in LD23:

OCN = NO

HPQ = YES

With this configuration, calls are selected in the following priority:

1   The oldest call in the Agent's own TOF queue

2   The oldest call in the Agent's High-priority queue

3   The oldest call from the Call Request queue or Local Flow-in queue

4   The oldest call in the Agent's non-priority   queue

Call presentation

The customer must first define call processing priorities for the system, as described above. Then, the system follows this procedure to present a call to the next available agent. Calls diverted by NACD are placed in the queue for the Source ACD DN, until an agent becomes available for the call.

When an Agent becomes available, that agent is reserved by the system for the NACD call. The Reserve Agent Timer starts, to prevent the Agent from being reserved indefinitely. During the countdown, the system sends an Agent Free notification over the D-channel to the Source ACD DN.

Receiving the Agent Free notification, the Source ACD DN then diverts the physical voice call to the Target Agent reserved for that call. On call presentation the display shows the appropriate information-dialed DN, DNIS number, CLID, for example. Diverting the call and system functions are completely transparent to the caller.

If the Reserve Agent Timer expires before the call can be presented, the call remains at the Source ACD DN.

Interactions

Features and services listed here are described in detail in other publications as ACD features or as software features compatible with Generic X11 software. Refer to the list of supporting documents in the front of this document. If a needed reference can not be found in that list, please consult with your Northern Telecom representative.

Only calls eligible for TOF treatment are eligible for NACD treatment. The following calls are not eligible:

- **ACD Ring Again** If RGA is applied to a call, it is not eligible for NACD.

- **Call Park Recall** Parked calls that time out and recall back to the ACD Agent are not eligible for NACD.

- **Non-ACD Interact** Digit translation is not supported on Target IDs within any Routing Table.

- **Teleset Messaging** Calls actively in Teleset Messaging are not supported by NACD.

Network ACD interacts with ACD and basic X1 1 features of the Meridian 1. These interactions are described below.

ACD interactions

Agent Lamps (AGT) An AGT lamp shows the ACD Supervisor the status for every agent in the group. The lamp states, explained in ***Distribution advanced features description*** (553-2671-101), are updated every time an Agent's status changes.

When an Agent is reserved for Network calls, the AGT key/lamp on the Supervisor's station is in the slow flash state.

ACD Calls Waiting (AWC) The ACD Calls Waiting (AWC) key uses differing lamp states to show the Agent when the number of calls waiting in queue has exceeded the customer defined threshold values. The lamp states work in conjunction with the normal Overflow by Number and Interflow features. However, by optional command in LD23, the AWC lamp states are enhanced in the NACD environment.

With the new lamp state option (NCWL) enabled the Busy Threshold (BYTH) and Overflow Threshold (OVTH) apply only to Overflow by Number and Interflow conditions, but do not change the lamp states. Calls in the Call Request and Local Flow-in queues are included when adding up the calls in queue for lamp state updates.

The new lamp state settings separated from BYTH and OVTH are available to all ACD Package B users with X11 release 15 or later. Independent of NACD, thresholds that now update lamps are defined by the customer in service change LD23 and Load Management.

These lamp states are based on the sum of all calls in the following queues:

- the Agent's own TOF queue
- the Agent's High priority queue
- the Agent's non-priority queue
- the Local Flow-in queue
- the Call Request queue

Dark	The sum of all calls in these queues is less than the Call Waiting Threshold (CWTH)
Steadily Lit	The sum of all calls in these queues is greater than the CWTH, but less than the Call Waiting Lamp Flash (CWLF) threshold
Slow Flash	The sum of all calls in these queues is equal to or greater than the CWLF threshold, but less than the Call Waiting Lamp Fast Flash (CWLW) threshold.
Fast Flash	The sum of all calls in these queues is equal to or greater than the CWLW threshold.

Dialed Number Identification Service (DNIS) The DNIS information is propagated to remote Target nodes. On call presentation, it is displayed on the Digit Display.

If the call is incoming on a non-ISDN trunk, the displayed information includes only the trunk access code, to show that it is an ACD call.

Display Queue key (DWC) The lamp states for the Display Queue (DWC) key are updated for NACD enhancements, as explained above in the Calls Waiting (AWC) description. The DWC display shows queue status in the following format:

   a a a - b b b - c c c − d d d d

where:

   a a a = sum of calls waiting in queue:
   Source TOF, High priority, non-priority

   b b b = Agent positions available

   c c c = waiting time for the oldest call in these queues:
   Source TOF, High priority, non-priority

   d d d d = sum of all calls in the following queues:
   nodal CCR, Flow-in, and Call Request queues

The supervisor can monitor the nodal Flow-in queue separately using the Display (DSP) key. Push the DSP key and dial the Source ACD DN. The display then shows the sum of calls in the Source TOF queue and Call Request queue.

Headset or MSB Log out (HOML) The HOML option allows an Agent to log out by removing the headset or going on-hook without using the Make Set Busy (MSB) key. Log out while on Agent Reserve causes a cancellation message.

Individual DN key (IDN) The IDN key can be any one of the following key types:

DIG	Dial Intercom Group
HOT	Hot Line
MCN	Multiple Call, Non-ringing
MCR	Multiple Call, Ringing
PLN	Private Line, Non-ringing
PLR	Private Line, Ringing
SCN	Single Call, Non-ringing
SCR	Single Call, ringing
v c c	Voice Call

When an Agent or Supervisor activates any IDN key while reserved, a cancellation message is sent to the Source node.

If any IDN key is used by a remote Target Agent when being presented with a call from the Call Request queue, the call is terminated to another idle agent. If there are no idle Target Agents available, the call remains at the front of the Target TOF queue and will be the first one to be answered.

Call Interflow (IFDN) Call Interflow takes precedent over Network ACD routing. That is, calls diverted to the IFDN are not routed by NACD. Network calls diverted to an IFDN lose all the network information, so that information can not be displayed on the terminating telephone.

If target ACD DN is a local ACD DN, Interflow and recall to source can be used. If target ACD DN is a remote ACD DN or a non-ACD DN, Interflow is not supported.

Disabling Interflow is recommended. Set the timer value to zero (0) in the routing table for those ACD DNs that need calls immediately diverted.

Key features When agent is reserved, activation of the following keys removes the position from reserve status:

AAG	Answer Agent key
ACNT	Activity Code key
AMG	Answer Emergency key
ASP	Answer Supervisor key
ADL	Auto Dial key
CFN	Call Forward key
MSB	Make Set Busy key
NRD	Not Ready key
OBV	Observe Agent key
RAG	Ring Agent key
SCC and SSC	Speed Call key

If these keys are used by a remote Target Agent when being presented with a call from the Call Request queue, the call is terminated to another idle agent. If there are no idle Target Agents available, the call remains in the front of the Target TOF queue.

Night Call Forward (NCFW) Night Call Forward (NCFW) is used only if there is no Night Table defined for an ACD DN.

Night Service (NSVC) With NACD, there are three Night Service treatments that can be defined:

— with Night Tables

Callers receive Night RAN, while the call is monitored for the timers defined for Targets nodes.

— Night Tables only

No Night RAN is given, while the call is monitored for the timers defined for Targets.

— Night Tables with Delay Night RAN Route (DNRT)

With active entries in Night Tables (DNRT) on, callers will get day treatment. The first FRRT must be 4 seconds greater than the timer value of the last entry in the Night Table for this to work. When all entries in the Night Table are inactive, then a Night RAN is returned to inform the caller that the network is closed.

Note: When a caller accesses the queue in night service and uses the NACD night table (the night table has open targets), the caller hears first and second RAN.

Transition mode:
When the Source ACD DN goes into Night Service via the NSVC key (dialing T [8]), calls already in queue still access the Day Table, but all new calls access the Night Table. If there is no Night Table defined, traditional Night Treatment is given.

Night mode:
The Source ACD DN goes into the Night Mode using the NSVC key (dialing N [6]), when all agents log-out. Then all calls access the Night Table, unless they have outstanding Call Requests from the Day Table.

- Source node in Night Service

    · Transition Mode:

        - New calls access the Night Table
        - Existing calls access the Day table

    · Night Mode:

        - New calls access the Night Table
        - Existing calls that have pending Call Requests from the Day table are honored, but there is no more searching of the Day table.

- Target goes into Night Service

    · Transition and Night Mode:

        - New Call Requests are denied
        - Existing Call Requests are canceled

When the Source ACD DN comes out of Night Service, only current Call Requests accessing the Night Table still apply. All new calls access the Day Table. Only calls without outstanding Call Requests can access the Day Table.

Overflow by Number (OWN) Overflow DNs defined at the OVDN prompt in LD23 are not used by NACD. They are used by Overflow by Number only. The same ACD DNs may be defined in the NACD Routing Tables as local Targets. OVDN then recalls to source when the call waits longer than the timer.

Priority Agents (PRI) PRI allows certain Agents or groups to have priorities defined for preferential call presentation. Agents or groups with higher priorities are linked more readily to the front of the idle agents queue. Lower priority agents are presented with calls only when all higher priority agents are busy.

If a priority agent is reserved but is not presented with a call, the priority agent will be put after those agents with higher priority and in front of agents with equal priority.

Figure 3
Target agent available

Queue Searching Hierarchy when Agent Becomes Available

1. Oldest call in network:

| P1 Calls |
| P2 Calls |
| P3 Calls |
| P4 Calls |

1. ─ TOF Q ── Call Request Q ── *high priority* **calls** { QCN = YES }
non-priority *calls* **HPQ=NO**

2. High Priority Q

3. Non-Priority Q

2. Own TOF Queue first:

| P1 Calls |
| P2 Calls |
| |
| P3 Calls |
| P4 Calls |

1. ─ TOF Q ─ *high priority* **calls** { *QCN = NO* }
non-priority *calls* **HPQ=NO**

2. ─ Call Request Q ─ *high priority calls*
non-priority *calls*

3. High Priority Q

4. Non-Priority Q

3. Own TOF and High Priority Queue more important than Flow-in Queue:

| P1 Calls |
| P2 Calls |
| P3 Calls |
| |
| P4 Calls |

1. ─ TOF Q ─ *high priority* **calls** { *QCN = NO* }
non-priority *calls* **HPQ=YES**

2. High Priority Q

3. ─ Call Request Q ─ *high priority calls*
non-priority calls

4. Non-Priority Q

Secondary DN call Blocking (SDNB) Secondary DN call Blocking
prohibits call presentation to an Agent's secondary DN while that Agent is
active on an ACD call.

Secondary DN call blocks when an agent is reserved.

If the agent is no longer reserved and IDN is MADN SCR, the light for that
DN flashes.

Time Overflow (TOF) If Routing Tables are not defined, then TOF operates
as usual. Refer to the Publications listed in the front of this document, for a
complete description of TOF.

Feature interactions

Calling Line Identification (CLID) CLID numbers are sent across the link on
call presentation to Target Agents. With CLID enabled, the originator's name
is sent across the network and displayed on the Target Agent's telephone only
if each route has Network CPND allowed. Refer to
Interface description and administration (553-2901-100) for more details on
Network CPND.

Calling Party Name Display (CPND) CPND displays preprogrammed
names associated with incoming calls only on M2317, M3000, and Meridian
Modular telephones (M2216ACD-1 and M2216ACD-2). Names associated
with this feature are only sent across nodes with the CPND package (95)
equipped. More complete details on Network CPND is in the *ISDN Primary
Rate Interface description and administration* (553-2901-100).

Without CLID, a call from outside the network displays the name associated
with the incoming route, if the Source node has a name defined for that route.

Call Forcing (FORC) After an ACD call is disconnected (by either party),
there is a two-second delay before the next call is accepted. If the next call is
from the Call Request queue, there is an additional delay from 0 to the
Reserve Agent Time before the call is presented to the Agent.

NACD Engineering

Dependencies

A Network ACD system requires that all nodes in the system have the same configuration. Networking parameters for ISDN and ESN *must be* consistent throughout all nodes or switches in the system with respect to NACD. Significant feature interactions may result unless all switches have the appropriate feature packages and classes of service enabled for NACD.

When configurations include a tandem Meridian 1, ensure that the D-Channel link speeds are engineered to meet required response and performance objectives.

For the proper supporting Generic and Release, consult your Northern Telecom representative.

Package dependencies

NACD requires X 11 release 15 or later issues of software. Expanded Target capabilities are introduced with the Enhanced Overflow (EOVF) package (178). which is also a prerequisite for the Network ACD package (207).

These are the minimum package requirements for Network ACD:

Package name	Mnemonic	Package number
Basic Routing	BRTE	14
Digit Display	DDSP	19
Basic Queuing	BQUE	28
Network Class Of Service	NCOS	32
Basic ACD	BACD	40
ACD Package B	ACDB	41
Network Alternate Route Selection	NARS	58
Coordinated Dial Pan	CDP	59
PBX Interface for DTI/CPI	PBXI	75
ISDN Signaling	ISDN	145
ISDN Primary Rate Access (CLID)	PRA	146
ISDN Signaling Link	ISL	147
Advanced Network service — Tandem nodes	NTWK	148
Enhanced Overflow (ACD)	EOVF	178
Network ACD	NACD	207

Note: Please remember that an error code is output for every package requirement not supported on your machine. For a complete definition of all error codes and system messages refer to the *X11 input/output guide* (553-3001-400). Also, a list of the available feature packages and package requirements is included in the *Xl 1 features and services* (553-3001-305).

Feature limitations

Calls from trunks without Disconnect Supervision are not able to initiate Call Requests.

Automatic Trunk Maintenance (ATM) is not supported on ISDN PRA or ISL trunks.

Network CPND is only supported on Meridian 1 nodes within the network.

Tandem Tie Trunk Networks (TTTNs) are not supported by NACD.

Only one location per NADC node can be used with HLOC in LD15.

Pretranslation is not supported on Target IDs in the Routing Tables.

Calls ineligible for NACD treatment are:

- ACD Ring Again calls
- Call Park Recall calls
- The call is active in Teleset Messaging

There should be one home location code per node.

There can be no more than 20 Call Requests pending for any one call.

Feature requirements

Private Network Identifier (PNI) A Private Network Identifier (PNI) relates to the customer number. It is required for interworking between switches. Within one network, use the same PNI value in both the Customer Data Block (LD15) and the Route Data Block (LD16). When operating between different networks, the Customer Data Block PNI is the PNI for your switch and the Route Data Block PNI is the PNI for the remote switch where the route terminates.

ESN requirements

The Electronic Switched Network (ESN) provides least cost routing between locations in a private network with a consistent dialing plan. Consistent dialing plans for each node in the network are provided by the Coordinated Dialiug Plan (CDP) or the Uniform Dialing Plan (UDP). If MAX is equipped, 7 digit dialing plan is required. For a complete description, refer to the ESN documents listed in the front of this document.

Each NACD node within the network must have a unique address that is known throughout the network. NACD requires that all nodes within the network have *either* a Coordinated Dialing Plan (CDP) *or* a Uniform Dialing Plan (UDP). The system with NACD cannot have *both* CDP and UDP.

These dialing plans are needed to identify each node within the network. All nodes within the network must be able to recognize every other node in the network. Identification is provided by the Local Steering Code (LSC) for CDP or the Home Location Code (HLOC) for UDP. When signaling messages are sent between nodes, each node is identified along with the return route for that node in response.

The Source identifier is put in the Source ACD DN field of the AUX messages at the Target node, and shown on the Agent's Digit Display on call presentation.

Coordinated Dialing Plan (CDP) A Coordinated Dialing Plan (CDP) consists of the CDP code and the Directory Number (DN). This dialing plan does not need an access code because the CDP code is part of the internal dialing plan.

The CDP code is one of the following:

- Distant Steering Code (DSC)
- Local Steering Code (LSC)

The complete CDP dialing plan can be from 3 to 7 digits long, or 3 to 10 digits with the DN Expansion package (DNXP, Package 150) enabled for Distant and Local Steering Codes. The DN length is defined in the ESN service change LD86 at the NCDP prompt.

The Target ACD DN identifier is the remote ACD DN defined in the routing table, and can only use the Distant Steering Code (DSC).

Source ACD DN identifiers are composed of the Local Steering Code (LSC) followed by the Source ACD DN. Every node in the network must recognize the LSC used for Source identifiers as a Distant Steering Code (DSC). Trunk Steering Codes (TSCs) are not supported by ISDN; and therefore, are not supported by NACD.

Define 7-Digit CDP Dialing Plan If there is no CDP dialing plan defined or if the existing CDP dialing plan is 7 digits long, then the CDP dialing plan can be used for the NACD application.

Overlay 86 ESN data block must have the number of digits in the CDP (NCDP) code prompt equal 7. Overlay 87 defines the 3-digit LSC. The LSC must have a PMI that deletes 3. A 3-digit DSC is required for each node on the network. Overlay 15, Customer Data Block, must also define LSC as the already defined LSC from Overlay 87. This programming must be done at all the nodes in the network.

Note: In Overlay 86 when defining Route List Entries that are associated with either DSCs or LOCs used with the NACD applications:

1. The routes (ROUT) must be ONLY ISDN routes. Also, the ISDN routes cannot STEP to non-ISDN routes.

2. The PNI defined for the routes must be equal to the PNI defined in Overlay 15. Customer Data Block, of the node that it is directly connected to.

3. No digit manipulation (DMI) can be defined, in other words, DMI=O.

Uniform Dialing Plan (UDP) The Uniform Dialing Plan (UDP) has an access code, a UDP code, and a DN. If the Network Alternate Route Selection (NARS, package 58) is enabled, there are two access codes that can be used, AC1 or AC2, and the location code. With the Basic Alternate Route Selection (BARS, package 57), you can only use AC1. Access codes for either AC1 or AC2 can be one or two digits long. The UDP must be 7 digits without the AC.

The UDP code can be any one of the following:

— Location Code (LOC)

— Home Location Code (HLOC)

If the Target node has a 5 to 7-digit ACD DN defined, only the last four digits are used as an identifier. When the terminating telephone answers the call, only the last four digits are shown as the CLID. The CLID can be used as a call back number.

Source ACD DN identifications are built from the Home Location Code (HLOC) and the Source ACD DN. The HLOC must be included in the AC1 translation table. Every node on the network must define the location code used for Target DNs as part of the AC1 translation table. Target identifiers are defined in the routing tables.

Recommendations

Customer Configurations

Network ACD can function in three basic configurations: Similar service, Special service, and a hybrid of the two. There can exist a combination of these NACD configurations within the same network.

Similar Service Network This configuration is used when there is only one service handled by NACD, and all ACD Agents are equally capable of handling any incoming call.

Every ACD DN within the network must be defined in all the other ACD DN's Routing Tables. Only the Oldest Call in Network (OCN) option is enabled, and all incoming trunks should be defined with the same priority.

OCN = YES

HPQ = NO

Special Service Network Here, there may be different services being offered by Agents throughout the network. Each Agent is specially trained for a particular product or service, but is still able to answer any incoming call. The ACD user can define specialized services among groups of Agents and still allow calls to be evenly dispersed among all available Agents during peak traffic times.

Only the ACD DNs with similar functions should be defined as Targets for each other. Every ACD DN should have OCN disabled (NO) and HPQ enabled (YES). All incoming trunks should be defined as High-priority trunks.

OCN = NO

HPQ = YES

Hybrid Network A Hybrid Network is a union of the two configurations mentioned above. Different services or products are being offered, but they are closely related. A TOF call for one ACD DN should have precedence over other calls overflowing to the same ACD DN. Still, it is best to answer **the** oldest calls first. After answering all TOF calls, Agents return to answering calls in their own high-priority queue.

Every ACD DN within the network must have all the other ACD **DNs** defined in the Routing Tables. Then, both OCN and HPQ are disabled (OFF).

OCN = NO

HPQ = NO

NACD engineering guidelines

When independent Automatic Call Distribution (ACD) nodes are properly networked using the Networked Automatic Call Distribution (NACD) package, the overall performance of the network can improve in three areas:

- reducing Average Speed of Answer (ASA)

- increasing total ACD calls handled by the network

- reducing ACD agents required to maintain the same service level

NACD is designed to allow the call distribution centers to function as one virtual queue based on the length of time calls have waited for available agents and on the work loads at each location.

> *Note:* Do not forward calls to centers that are overloaded or understaffed. Use care when provisioning trunks between locations. Under-provisioning can result in agents being reserved for calls, but with no facility available for presenting the overflowed network call.

It is necessary to look at the call registers and the real time effect of adding NACD to new or existing Meridian switches.

The following outlines guidelines for establishing NACD, including:

- Target table definition

- Parameter definition

- Network requirement

- Design of the NACD Routing Table

- Incremental impact engineering

Target table definition

NACD automatically routes calls to available agents. For maximum efficiency, define the order of remote targets in the NACD routing table according to the guidelines below.

Real time impact

CPU Real Time engineering is always required at the source node. The CPU of a tandem or remote Target node needs engineering only when its busy hours coincide with those of the Source node.

Non-coincidence busy hour (time zone difference)

Busy hours in branch offices are often similar for large organizations spread over a wide geographical area. NACD improves the utilization of facilities by overflowing calls arriving at the Source node to Target nodes in a different time zone so that idle resources at Target nodes with different busy hours can be fully utilized. This allows for a better balance of agents across the network. It may also reduce the need to provide extra staff at the Source location during peak times as the traffic is now distributed across the network.

Table 3
NACD Target entry registration

Reasons to get NACD002	Actions
Dialing Plan is incorrect	1. Try making a B-channel call from source to target node dialing the number that is in the target table Make another call from target node using the HLOC value in OVL 15 of the source node and the Source ACD-DN preceded by Access code defined in OVL 15 at target node. 2. If okay, then enable D-channel messages and try again. Look at originating and terminating IEs in facility messages. 3. If not okay, check DB.
D-channel is down	Enable D-channel at all affected nodes.
Route list does not have ISDN trunk	Define ISDN routes in route list.

ACD DN load at each node (spare capacity)

The relative ACD DN load between the Source node and a Target node is one of the most important considerations in determining where to overflow the waiting call. If the average loading per ACD DN is known, then the ACD DN with the lowest loading receives the highest priority for receiving networked ovefflow calls.

To calculate the ACD DN with the lowest loading (or the highest spare capacity), use the following formula:

$$S = (33-A) \times N$$

where:

S = Spare Capacity

A = Agents load in CCS (Calls Accepted X Avg. Work Sec.) / 100

N = Number of agents in the queue

Once the network is installed, it may be necessary to recalculate the spare capacity to provide better balance on the network.

The spare capacity is calculated only for the Target location since it receives the extra traffic.

If S is negative, the Target ACD DN is overloaded and cannot accept any overflow traffic.

Agents group size in an ACD DN

Due to the higher traffic carrying capacity of a larger service group, when two ACD DNs have the same average agent loading per ACD DN, the ACD DN with the most agents receives a higher priority in the routing table.

Number of hops

In general, a call with a number of switches involved in the call set-up requires more resources than a network call involving only two switches. As a general rule, the ACD DNs co-located in the Source node receive the highest priority in the routing table.

The next consideration is for locations with only one hop or point-to-point connections. If possible, nodes requiring tandem connections should receive a lower priority depending on how many tandem points are involved.

Note: The real time impact of each NACD call is 56 ms at the Source location, while tandem calls require 21.5 ms of real time. Each NACD call requires 194 ms to set up, while a non-network ACD call requires 138 ms. Each time a Call Request is sent over the network, one call register is required at the Source node and one call register is required at the Target nodes. These call registers are required in addition to those necessary to establish the call. They are required only with Call Request messaging for NACD calls.

Parameter definition

The parameters used to control NACD are defined below.

Flow Control (Overlay 23: FCTH)

The Flow Control option opens and closes the ACD DN for network calls. Once the number of Call Requests received over the network meets the call request queue size defined in Overlay 23, the queue is shut down (INACTIVE) for network calls. For the queue to open for network calls, the pending queue request size must drop to a value equal to the flow calls control.

For example, a call request queue size of 50 with a flow control of 10 allows the queue to become inactive after 50 call requests are pending. After 10 calls or 10 Call Requests have been answered or removed, leaving 40 remaining in queue, the queue will reopen.

Call Request Queue Size (Overlay 23: CRQS)

It is recommended that the Call Request Queue Size be approximately 20% higher than the number of trunks available for networking. If the customer selects the Oldest Call in the Network option (OCN), set this value at 5% over trunking capacity. This avoids reserving agents for calls on the network when trunking facilities are unavailable. Flow Control (FCTH) is typically set at 25% of the call request queue size.

The CRQS must be defined for each ACD DN in the network.

Resend Timer (Overlay 23: RSND)

This is the length of time the Source node waits for a response from the Target node after sending a Call Request message. When the Resend Timer expires, another message is sent. If the second Call Request message expires without a response, the Call Request is removed from the network queue. The Resend Timer is set to a 4-second default and should be changed only if the network uses multiple hops and ISL with lower baud rates.

A single hop typically requires 100 ms of real time to set up the call. When the Resend Timer is too large, the control function of the timer to limit traffic to busy nodes is lost. If the Resend Timer is too small, the access of calls to nodes may be limited unnecessarily.

The Resend Timer must be defined for the Source node and the Target nodes.

Reserve Agent Time (Overlay 23: RAGT)

The Reserve Agent Timer indicates the maximum amount of time an agent is reserved for a network call. The range is 2-30 seconds with the default set at 16 seconds. The Reserve Agent Timer may be changed using two-second increments.

If the Reserve Agent Timer is set too high, the agent is reserved waiting for calls. If the Reserve Agent Timer is set too low, the agent may be freed before the network facility can set up the call. Different timer settings may be tried through Load Management. Subsequent calls are presented to agents only after the Reserve Agent Timer has expired.

The RAGT must be defined only for Target queues.

OCN-Oldest Call In The Network (Overlay 23: OCN)

This feature determines if the oldest call in the network is answered ahead of calls to the Source location. Use caution with this feature. Because agents are reserved for network calls, agents may remain idle while calls wait in the local queue.

To avoid reserving all the agents for network calls, split the ACD group into two areas: one area for all calls and the second area a group of agents equal to the number of tie lines between the network locations. This solution allows local calls to overflow by time into the area for all calls.

The OCN option must be defined only for Target queues.

ACD agents requirement at each node

The current method of calculating ACD agents inflates ACD calls by 30% to allow for peak traffic during busy hours. The provisioning of agents requires 30% spare capacity to cover traffic peaks. When NACD is applied normally, this 30% spare capacity is not necessary since queued calls are offered to other nodes in the network after the designation overflow timer expires. However, if all nodes peak at the same busy hour, the 30% spare capacity is still required.

Trunking requirements at the source and target nodes

Each node on the network must have a connection to the Source node, either directly or through one or more tandem nodes. It is assumed that the trunking requirements have been satisfied to handle existing traffic. For NACD, estimate the incremental requirement for carrying overflow calls to each target node.

In the current engineering procedure, there is an adjustment similar to agent traffic on the trunking requirement for traffic peaking of 30%. Waiting calls are eventually handled by other nodes with less average waiting and do not occupy the trunks.

Keep the peak load adjustment, but reduce the Average Speed of Answer (ASA) by half in the trunk calculation to allow for the potential reduction in waiting time. Modify trunk traffic calculations to the Source node by multiplying Average Busy Season Busy Hour (ABSBH) traffic by 1.3 to account for trunk traffic peak load. If the level of given traffic in calls already reflects the peaking factor, then replace 1.3 with 1 .O in the following calculation.

Trunk Traffic = (Offered Calls x 1.3 x DCP/100) + (Offered Calls x 1.3 x 0.5 x ASA/100) CCS.

Direct Call Processing (DCP) is the time in seconds that is spent handling incoming ACD calls.

Where the objective of networking is to reduce the number of agents in the Source node while maintaining the same level of service, perform the same calculation but reduce the number of agents at the Source node and calculate trunk traffic without the 50% reduction of ASA in the above formula.

Duration Timer (Overlay 23: DURT)

The Duration Timer indicates how long a Target node honors a call request from the Source node. If the timer expires, the call is removed from the call request queue. The range of the Duration Timer is from 15-45 minutes with the default set at 30 minutes. If this timer is too large, the network call request queues may become overcrowded. If the timer is too small, waiting customers may be cut off from receiving services.

This timer must be defined only for Target queues.

Network requirements

The requirements for establishing NACD on a network are outlined in the sections that follow.

Signaling link requirements between source & target nodes

If the signaling message for NACD applications is carried by a PRA D channel between two nodes, the PRA D channel's signaling capacity is so large that engineering of the link is not required. If the signaling link is ISL, the data rate of the signaling link must be determined. Use care in multiple hops to ensure recalculation of all the traffic on the ISL link. For multiple hops, engineer all links to the same baud rate. Avoid using ISL links at different speeds since this can block messages at the tandem location.

The formula to calculate the ISL/PRA rate is:

Number of NACD calls x .63 = BPS

Where:

BPS = Bytes per second

Table 4
Data Link Capacity for NACD and ISL Calls

Link Data rate (D) in Kbps	64	19.2	9.6	4.8	2.4	1.2
NACD Calls	54,064	27,563	15,303	7,655	3,827	1,908
No. ISL Calls	77,582	39,553	21,960	10,985	5,492	2,738

Overflow traffic estimation

Since removing the high day traffic adjustment is recommended when engineering agent positions, consider 30% of Source traffic as potential overflow traffic. Use this rule when the average agent load at the Source node is unknown. Otherwise, traffic exceeding a loading of 33 CCS per agent is overflowed.

To calculate the number of overflowed calls from the Source node to Target nodes, use the average holding time of 180 seconds.

$OT0 = A0 - 33 \times N0$

OTO = Overflow traffic from Source node in CCS

$A0$ = ACD traffic in CCS calculated from (Calls Accept x AVG Work Sec)/100

NO = number of agents at the Source node

The number of overflow calls $= OT0/180$

If OTO is a negative number, the traffic is too low or too many agents are assigned to this location and no calls will overflow onto the network from this node.

Average CCS loading per agent at each ACD DN

The relative ACD DN load between the Source and a Target node is one of the most important considerations in determining where to overflow a waiting call. If the average loading per agent is known, then the node with the lowest average load becomes the highest node in priority to receive overflow calls.

Average Agent Loading in CCS can be calculated from the ACD DN performance report. The equation is as follows:

Avg. Agent Loading in CCS = Average Work/Manned % x $36/100$

The value of Work/Manned % from a Target ACD DN performance report is the average traffic level of the Target ACD DN during the busy hour of the Source ACD DN.

Call register requirements

The incremental requirements for call registers between ACD and NACD are the additional call registers required at the Source node to hold calls waiting to be overflowed to Target nodes. The recommended procedure is:

X = Calls/hours overflowed to all Target ACD DNs. This is OTO x100 / HT

Y = Calls/hours overflowed to the local Target ACD DNs

This is (OTl+...+OTk)X 100/HT, where k is the number of Target ACD DNs co-located in the Source node.

ASA = Average Speed of Answer in seconds required at the Source node

HT = Average holding time of an NACD call (default is 180 seconds)

Q = Average number of NACD timers expired before the call is answered

Default is 1.5 queues.

W = Number of calls overflowed from other nodes to the Source node during the busy hour (should be 0 for an efficient network)

t = The first timer value in the NACD table

CRQ = Call Request Queue size

Incremental CR Traffic at Source Node

Snacd = $(X+W)$ x ASA x $Q/100$ + $(X-Y)$ x $HT/100$ ccs

incremental CR Traffic at Target Node

Tnacd = CRQ x $(ASA-t)$ / 100 ccs

Incremental CR traffic at a combined Source and Target Node

Snacd + Tnacd

Refer to Table 5 to find the number of incremental CRs required for NACD.

Note: Add the incremental CRs to the CR requirement for ACD based on the procedure in the next subsection.

Table 5
Poisson table at P.01 grade of service

CRs	1	2	3	4	5	6	7	9	10	15	20	25	30	35	40
ccs	.4	5.4	15.7	29.6	46	64	84	105	126	269	399	535	675	616	964

This procedure applies when NACD is engineered as an add-on to existing ACD nodes. To completely engineer an ACD network, use the equation in the next section, CR for New NACD Engineering.

CR for New NACD Engineering

Modify the Incremental CR traffic at a combined Source and Target Node equation as follows to include NACD CR traffic. The result of this equation equals the number of CRs required.

$$(T + Snacd + Tnacd + 815)/33.8 + M$$

Where:

$T = (A/2 \times C \times 1.42) - M \times L.$

A = the total voice loop (system) traffic in CCS

$Snacd = 0$, if the system is not an NACD Source node

$Tnacd = 0$, if the system is not an NACD Target node

M = the number of ACD incoming trunks

L = average CCS per ACD traffic

C = the call register traffic factor

    $= 1 + 0.037$ if CDR Charge Account is equipped

    $+ 0.074$ if Authorization Code

    $+ 0.037$ if Parallel CDR ports per customer

    $+ 0.150$ if NARS/BARS/CDP

    $+ 0.150$ if FCBQ and OHQ

    $+ 0.033$ if ACD RAN

    $+ 0.019$ if Teleset Messaging

    $+ 0.140$ if Integrated Messaging System

+ 0.083 if Ring Again

+ 0.033 if Music Trunk

+ 0.067 if Call Park

+ 0.003 if New Flexible Code Restriction

+ 0.039 if ESN Signaling

The accuracy of the above CR equation proves accurate for larger groups, for example, 100 CRs or more. It is not recommended for incremental estimations which are usually smaller compared with the original ACD CR calculation.

Designing the NACD Routing Table

The objective of designing an overflow routing table is to minimize the waiting time of calls in the network without creating excessive inter-nodal traffic.

A point system is used to rank the potential of success if the waiting call at the Source node is put into the Call Request Queue of a Target node. The Target ACD DN with the highest points indicates the best candidate to handle the overflow calls. The point system provides an objective way to evaluate the spare capacity of a potential Target queue.

Whenever the same numbers are assigned to multiple ACD DNs due to equal value, the next number will continue, but the total in the set remains the same.

ACD agent group size (P1)

All Target ACD DNs are ranked according to the agent group size. The ACD DN with the largest agent group is assigned $P1 = 5$, the next one 4, and so on. If there are more than five Target ACD DNs, the rest are assigned zero $P1$, which means that no more preference is given to agent size after five groups. This variable should not be greater than five in weight. If any two ACD DNs have the same number of agents, they should be assigned the same value. No more than five ACD DNs will be assigned points in this category. In summary:

$P1 = 5$ for the ACD DN with the largest agent group

$P1 = 4$ for the next size group

$P1 = 3$ for the next

$P1 = 2$ for the next

$P1 = 1$ for the next

$P1 = 0$ for the 6th largest or less

Average agent load at each target ACD DN (P2)

Assign the highest priority to the Target node with the lowest average agent load during the Source node busy hour. If any two nodes have the same average DN loading, assign the same points to each of them. The proposed point assignment is as follows:

$P2 = 5$ for the Target node with the lowest average agent loading per ACD DN

$P2 = 4$ for the next lowest

$P2 = 3$ for the third lowest agent loading per ACD DN

$P2 = 2$ for the fourth lowest agent loading per ACD DN

$P2 = 1$ for the fifth lowest agent loading per ACD DN

$P2 = 0$ for agent loading higher than above

Number of hops **(P3)**

Multi-hop routes may require longer message delay, more CPUs to handle the same call, more tandem trunks, may experience higher blocking, and may cost more because of the charges associated with the distance of the call. Multiple hops require a longer Reserve Agent Timer to wait for the call to set up. Therefore, multi-hop routes are not encouraged.

The weight of this variable is more than for the other categories listed above.

$P3 = 5$ if Target is co-located with Source node

$P3 = 0$ if Target ACD DN is the next node

$P3 = -5$ if one hop in the route (one tandem connection)

$P3 = -7$ if two hops in the route

$P3 = -9$ if three hops in the route

If sufficient trunking is available in an existing tandem route so that blocking and cost penalties are of little concern, the user may change the negative weighting factor assigned to this parameter. One example may be:

$P3 = -1$ for one hop; $P3 = -2$ for two hops; $P3 = -3$ for three hops.

No limitation exists (except for a satellite, which allows only one hop) on the number of hops permitted in an NACD. In a private network, any tandem call requiring more than three hops is unusual.

Non-coincidence busy hour and time zone difference (P4)

P4 is the point allocated to the Target node with a different busy hour from the Source node. Assign four points for each hour's difference in busy hour. For example, if the Source node experiences a busy hour at 9 a.m., and the Target node has a busy hour at 11 a.m., then assign P4 = 8 points $(= 4 \times [11-9])$ to the Target node.

This allocation of points is based on the absolute difference of busy hour between the Source and Target node. For example, if the Source node is in Toronto and the Target node is Vancouver, the time zone difference of three hours brings 8 a.m. in Vancouver and 11 a.m. in Toronto into the same real time hour. Since only an absolute difference in hours is allocated points, no points for nodes are allocated in the example involving Toronto and Vancouver.

If the busy hour of the Source node and a Target node are not known or cannot be located (inconsistency), let P4 = 0. In summary:

P4 = The points allocated to the Target node with different busy hours from the Source node. Each hour difference is assigned 4 points.

P4 = 4 X the number of absolute hours difference between the Source and Target node busy hours

P4 = 0 if there is no consistent busy hour at the Source and Target nodes

Ranking of target nodes on NACD routing table

Every Target node is assigned points according to its relationship to the Source node based on the above four categories. All points are summed for each node. The node with the highest point total receives the top priority in the routing tables. Nodes are ranked from Q1 to Q20, from the highest to lowest point total. The routing table allows a maximum of 20 DNs.

$$Q = P1 + P2 + P3 + P4$$

Negative values are ranked behind nodes with zero points.

$$Q1 > Q2 > Q3 > \ldots Q20.$$

If Qi equals $Q(i+1)$, choose the node closer to the Source node.

When an NACD has more than five nodes, several nodes after the first five have zero Qi values. This is expected since they are far down the NACD table. The preference of one node over the other is negligible, because their chances of being offered overflow calls are diminishing.

Timer value in NACD routing table

The timer value should allow calls to queue on as many virtual queues as possible, but not congest call request queues. The length of a wait for a call is closely associated with the Average Speed of Answer (ASA) that a customer specifies and which the system is configured to meet. Therefore, the overflow timer (Ti) should be a function of ASA. If the customer does not have an objective ASA, then use the default time interval of 10 seconds. Recommended settings are as follows:

$T1$ = 10 seconds or ASA/n, whichever is smaller. The value of n is the number of Target DNs.

$T2$ = 20 seconds or 2 x ASA/n, whichever is smaller.

$T3$ = 30 seconds or 3 x ASA/n, whichever is smaller.

$T4$ = 40 seconds or 4 x ASA/n, whichever is smaller.

.

.

$T20$ = 200 seconds or 20 x ASA/n, whichever is smaller.

Whenever the timer value calculation results in an odd number, round it to the smaller even number, since the timer interval in NACD operates in two-second increments. Also, timer values for several DNs can be the same so that when the NACD table contains many entries, a large timer for lower entries may not be necessary.

### Engineering Example: A 5 ACD DN and 4-Node NACD

The network consists of 5 ACD DNs and 4 nodes across three time zones with different busy hours. ACD DN1 is co-located with the Source node ACD DNO. ACD DN3 is a tandem node between the Source node and ACD DN4.

Figure 4 shows a simplified block diagram of the NACD. All DNs denote the ACD DN.

Figure 4
A 5 ACD DN and 4-Node NACD Network

DN0   DN1
60   30

DN2
20

DN3
40

DN4
80

553-5541
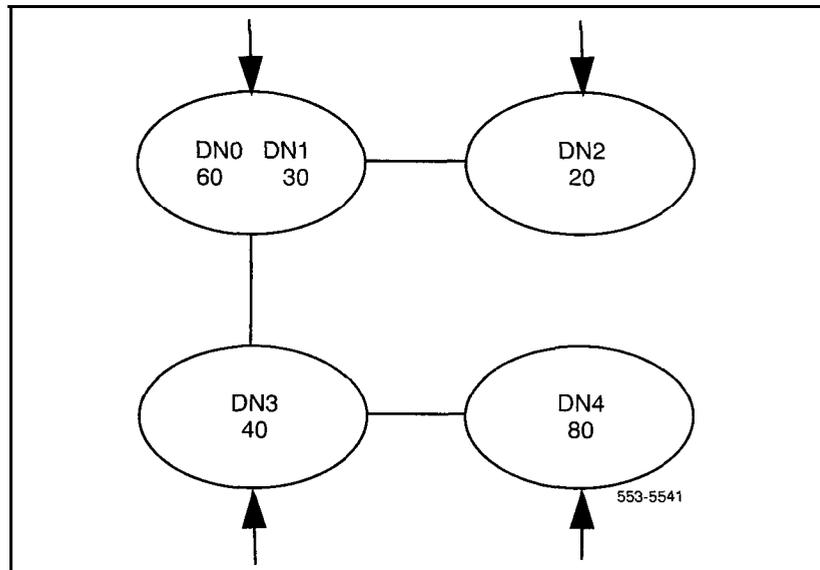
- 1200 calls Average Busy Season Busy Hour (ABSBH) traffic are offered to the Source node (ACD DNO). The direct call holding time is 180 seconds. The ASA is 60 seconds.

- The number of agents (Ni) is shown under each ACD DN.

- ACD DNO, ACD DN1, and ACD DN2 are within the same time zone.

- ACD DN3 is one hour ahead of ACD DNO.

- ACD DN4 is one hour ahead of ACD DN3 and two hours ahead of ACD DNO.

- CCS per agent was estimated at 33 CCS/Agent for ACD DNO, 30 CCS for ACD DN1, 28 CCS for ACD DN2, 25 CCS for ACD DN3, and 25 CCS for ACD DN4 at the busy hour of ACD DNO. The number of agents at ACD DNO was engineered to handle ABSBH calls. When High Day Busy Hour (HDBH) traffic is offered to ACD DNO, approximately 30% of calls overflow.

  Use the following formula to calculate CCS per agent from the ACD report:

  · CCS per agent = 36 CCS x Total Work/Total Manned Time.

  · Work Time = direct call processing time t post call processing time.

  · Manned time = the time consoles are manned by agents.

  All time units are expressed in total minutes within the busy hour per an ACD DN.

- The busy hour for ACD DNO is 11 a.m., ACD DN1 is 12 p.m., ACD DN2 is 11 a.m., ACD DN3 is 12 p.m., and ACD DN4 is 1 p.m. All times are expressed relative to the time zone of ACD DNO.

Design of NACD Routing table

The NACD configuration statistics are summarized in the following table. The shaded rows represent points assigned to the parameters above them. The total points for each node are tallied in the last row of Table 6.

Table 6
NACD Configuration DATA and Timer Priority Assignment

Source ACD DN		Target ACD DNs				
Assigned Pts.	Node	DNO	DN1	DN2	DN3	DN4
No. of Agents	NI	60	30	20	40	80
Assigned Points	PI		3	2	4	5
Avg CCS/Agent	ai	33	30	28	25	25
Assigned Points	P 2		3	4	5	5
No. of Hops			co-locate	0	0	1
Assigned Points	P 3		5	0	0	-5
Bush Hour in DNO Time		11 a.m.	1 2 p.m.	11 a.m.	1 2 p.m.	1p.m.
Assigned Points	P 4		4	0	4	8
Sum of Assigned Points			1 5	6	1 3	1 3

The sum of total points for Target nodes uses the following sequence:

$$Q1 > Q3 = Q4 > Q2.$$

Since ACD DN3 is closer to ACD DNO than ACD DN4, it receives a higher priority than ACD DN4 in the NACD routing table. The sequence of the timer should be ACD DN1 first, ACD DN3 next, ACD DN4 further down the table, and finally, ACD DN2 at the bottom of the list.

The desired ASA for this network is 60 seconds which yields a timer interval of 14 seconds $(= 60/4-1)$. Since it is larger than the default timer value of 10 seconds, use 10 seconds as the timer interval. The NACD routing table looks like this:

Table 7
An NACD Routing Table

Target DN	Time in Seconds
ACD DNI	1 0
ACD DN3	**20**
ACD DN4	**30**
ACD DN2	**40**

ACD DN1 in this example is a 4-digit directory number, since it is located with the Source ACD DN. The other ACD DNs are likely to have more digits which are defined according to a Uniform Dialing Plan or a Coordinated Dialing Plan.

Incremental impact engineering

To determine the incremental requirements when the five nodes change from serving individual nodes to NACD, consider the factors discussed in the sections below.

Trunking requirement

Estimate the amount of trunk traffic to be overflowed to other nodes from the source.

Trunk traffic to source ACD DN

Trunk CCS = (1200 x 1.3 x 180/100) + (1.3 x [OS x 60] / 100) = 2808 + 468 = *3276*

Where the 1200 offered calls to the Source node is the Average Busy Season Busy Hour (ABSBH) traffic, an additional 30% of traffic reflecting High Day Busy Hour (HDBH) peak level is added as recommended in *Automatic Call Distribution feature engineering* (553-2671-151). If the customer defines the input traffic as an HDBH value, then the 30% adjustment is not required.

The ASA is reduced by half to reflect the effect on queuing time and trunk loading. This incoming traffic (3276 CCS) requires 115 trunks to carry it (based on Poisson P.01)

The incoming trunk requirement is estimated from 3276 CCS. However, for calculating actual overflow traffic, the portion associated with waiting (468 CCS) should be discounted, since it is an overhead in addition to the normal call service time (180 seconds per call) which should not be used for estimating overflow calls.

Overflow traffic from source ACD DN

OTO = 2808 − (33 x 60) = 828 CCS or 460 calls (with 180 seconds HT)

Where 2808 CCS is the offered traffic to the ACD DNO agents, the maximum loading per agent is set at 33 CCS or 92%. The CCS is converted to calls by multiplying 100/180 (=828 x 100/180 = 460).

Calls handled by the source node agents

33 x 60 x 100/180 = 1100 calls handled by ACD DNO.

Agent loading is set at 33 CCS and the average holding time is 180 seconds.

Incremental traffic to-each target node

1   The first ACD DN to accept overflow traffic: ACD DN1

The spare capacity at ACD DN1: $S1, 1 = (33 - 30) \times 30 = 90$ CCS

OT1 = the smaller of OTO (828 CCS) or $S1,1 = 90$ CCS or 50 calls

Since ACD DN1 is co-located with the Source ACD DN, no trunk is required to handle the overflow traffic.

2   The second DN to accept overflow traffic: DN3

The spare capacity at DN3: $S3,2 = (33 - 25) \times 80 = 640$ CCS

OTC = the smaller of $(828 - 90 - 320)$ or $640 = 418$ CCS

At Poisson P.01 (a customer designated value; blocking could be higher for a private network), the incremental trunks are 33. This traffic corresponds to 410 (= 178 + 232) overflowed calls.

3   The Third DN to accept overflow traffic: DN4

The spare capacity at DN4: $S4,3 = (33 - 25) \times 80 = 640$ CCS

OT3 = the smaller of $(828 - 90 - 320)$ or $640 = 418$ CCS

At Poisson P.01 (a customer-designated value; blocking could be higher for a private network), the incremental number of trunks required to handle 418 CCS is 21. The number of calls on this route is 232.

The traffic between the Source node and node 3 is 738 (= 320 t 418) CCS. The required incremental trunks are 33. This traffic corresponds to 410 (= 178 t 232) overflowed calls.

4   The fourth DN to accept overflow traffic: DN2

ACD - DN4: $232 \times 0.63 = 147$ bps. This is the data rate for the link between ACD DNs and ACD DN4.

Real time requirement

Incremental real time is the extra processing time required of the Source node CPU to handle NACD overflow calls to all Target nodes. The Target node CPU does not require special engineering, since it is not in its busy hour and handles calls only when it has spare capacity.

Calls to all target ACD DNs

Incremental real time of NACD overflow calls: 460 x 1.38 = 635 EBC.

Where:

460 is the total number of overflow calls from the Source ACD DN.

Incremental real time of **NACD/ACD** calls handled at the Source node over basic incoming trunk to SL-1 set calls = 1100 x 0.60 EBC, where 1100 is the total number of calls handled by the Source ACD DN agents. This EBC should be taken care of if the NACD configuration is evolved from an existing ACD node. If the Source ACD DN is a new NACD node converted from a non-ACD switch, then the real time impact is 1295 EBC (= 635 t 660).

When a Target node becomes a Source node during its busy hour, the rest of the nodes in the network are treated as Target nodes. When two or more nodes are Source nodes in the same busy hour, the NACD routing tables one at a time and treats the rest of the nodes as Target nodes.

Call register requirement

From the Overflow Traffic From Source ACD DN and Incremental Traffic to Each Target Node subsections above, calls from ACD DNO and to ACD DN1 are known:

X = 460 calls (total overflow calls from ACD DNO)

Y = 50 calls (calls overflowed to ACD DN)

Incremental Source node CR traffic: $Snacd = (460 \times 30 \times 1.5/100) + (460 - 50) \times (180/100) = 945$ CCS, where an ASA of 30 seconds is assumed. Referring to a Poisson table with P.01 Grade of Service, the additional number of CRs required for the NACD application is 40.

Since none of the Target ACD DNs accepting overflow traffic has the same busy hour as the Source node, assume that all Tnacd traffic (CR traffic for each Target ACD DN) can be absorbed by the spare CRs available due to non-busy hour traffic overflowing to that Target ACD DN.

Note: Although the number of calls offered to the NACD is 1200, the network is engineered for 1540 calls due to the ABSBH versus HDBH considerations.

Implementation

For information concerning the configuration for Network ACD, refer to *X11 input/output guide* (553-3001-400).

For information concerning Load Management commands related to Enhanced Overflow and other ACD features, refer to *Automatic Cull Distribution ACD load management commands* (553-2671-103).
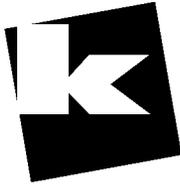
Operations

Agent telephone displays

Agent telephones equipped with display show information relating to call presentation and certain key functions. These displays are still supported by NACD.

Network ACD functions also add information to the displays, pertinent to the network functions involved with a particular call. The display is dependent on the conditions for each call presented.

Set displays for different telephones are significantly different. Please consult the appropriate user guide for your telephones.

Specific telephone displays are addressed in the Meridian Modular Telephones User Guide. and the Meridian M22 16ACD Modular Telephone User Guides. Please refer to the supporting documents listed in the front of this document.

Management reports

Package C for ACD provides traffic reports on a regular basis to assist supervisors. There are ongoing status displays, and four types of periodic reports and daily totals reports. These reports are essentially unchanged by NACD operation; but, the values generated in the output fields are changed according to the NACD traffic for your application.

Calls are diverted for different reasons, and Network ACD diverts calls over widely separated locations. Some calls overflowed by Network ACD may end up in queues that are reported under Management. Package C reports do not differentiate between Network calls and regular ACD calls (local). ACD Supervisors can use the following calculations to interpret their Management reports. Network ACD impacts Report 2 (REPT 2), the Queue report, in Package C.

Administration and operational measurements

There are certain administrative works that must be performed before the users can benefit from this feature.

Service change

Several service change programs need to be modified for this feature. The list includes overlays 11, 12, 20, and 95.

Overlay 11 No new prompt is added to this overlay. However, after each service change sequence, a language request is sent to the M2xxx set along with the proper download sequence.

Overlay 12 No new prompt is added to this overlay. The existing overlay already has a language preference prompt. The M2250 language perference will be taken from the response to the existing language prompt.

Prompt	Response	Comment
LANG	**0-5**	0 = English
		I-5 = Roman

Overlay 20 Language selection will be printed for Aries sets. The output format will be as follows:

Prompt	Response	Comment
CPND LANG:	ROM/KAT/ENG	Roman, Katakana, English

Overlay 95 Extensive changes are needed for overlay 95. This overlay must be able to allow and differentiate different languages for the CPND name inputs. Hence, a new language prompt is added to the existing sequence of prompts for this purpose. In the following simuation, capital-lettered prompts are the new or changed prompts.

Table 8
Prompts and responses

Prompt	Response	Comment
req	new/chg/out/prt	
type	name	
cust	xx	
LANG	ROM/KAT/ALL[1]	Roman, Katakana, or All (for req = out).
(page) dig	(yes/no) ggg mm	dial intercom group/ member
name[2] (xpin)	xxxxxxxxxxx xx	name entered for the dig member
... dn	... xxxx	directory number
name[3] ... (xpln)	xxxxxxxxxxx ... xx	name entered for the dn

Note 1: ALL is an option only when the response to req is out. ALL will take out all language entries stored against a DN or DIG.

Note 2: dig will be preprompted if req is chg. If req is new, dig will be reprompted after xpin.

Note 3: dn will be reprompted if req is dn. If req is new, dn will be reprompted after xpin.

Traffic measurements

Whenever the English CPND is generated from the Roman CPND, the resulting English CPND string may be longer than the Roman CPND that it is generated from (some Roman language characters translates to 2 English characters) and results in a slight increase in traffic.

Network ACD

Description and operation

northern telecom