

**AUTOMATIC CALL DISTRIBUTION
PHASE 2—DESCRIPTION
FEATURE DOCUMENT**

2-WIRE NO. 1 AND NO. 1A ELECTRONIC SWITCHING SYSTEMS

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INTRODUCTION

1. GENERAL INFORMATION

SCOPE

1.01 This section contains general information on a group of features which comprise the Automatic Call Distribution—Phase 2 (ACD2) System with No. 1 and 1A Electronic Switching Systems (ESSs).

(a) The ACD2 features are listed below:

- Automatic Call Distribution (ACD) Multiline Group Hunt (Section 231-090-336)
- Tones and Announcements to Agents (Section 231-090-338)

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- ACD Queueing and Calling Distribution to Agents (Section 231-090-339)
- Basic Data Link Input/Output Control (Section 231-090-412)
- Interface With ACD-ESS Management Information System (Section 231-090-413)
- ACD Interface With 12A Customer Information System (Section 231-090-418)
- ACD2 Agent Log-in (Section 231-090-415)
- Interface With Coordinator Cathode Ray Tube Terminal (Section 231-090-421)
- Interface With 60B Customer Premises System (Section 231-090-423).

(b) The following features are related to ACD2:

- Automatic Line Insulation Test (Section 231-090-052)
- Calls Waiting Lamps (Section 231-090-082)
- Delay Announcements (Section 231-090-123)
- Interface With Common Systems Recorded Announcement Frame (Section 231-090-411).

REASON FOR REISSUE

1.02 This section is reissued to improve the overall description of the ACD2 System and to delete redundant detailed information that is contained in the documents listed above. Since this is a general revision that involves conversion to the standard 18-part format, change arrows have not been used because there are no technical changes.

FEATURE AVAILABILITY

1.03 Except as noted in paragraph 1.04, all ACD2 System features are initially available with the 1E4 (No. 1 ESS) and 1AE4 (No. 1A ESS) generic programs. The ACD2 System is optionally loaded and requires the following feature groups:

- ACD2—Automatic Call Distribution—Phase 2
- DLIO—Data Link Input/Output

- DLSQ—Data Link Sequencing (Optional)
- IRES—Inquiring and Response System.

1.04 The Data Link Sequencing feature is initially available with the 1E5/1AE5 generic programs. The Agent Log-in feature is initially available with the 1AE6/1E7 generic programs.

2. DEFINITION/BACKGROUND

DEFINITION

2.01 The *Automatic Call Distribution—Phase 2 (ACD2)* System is used to concentrate, queue, and equitably distribute incoming calls to assigned attendants (agents).

BACKGROUND

Note: When considering an ACD System for a particular customer application, consideration should be given to Basic ACD (Section 231-090-269) and ACD—Phase 1 (Section 231-090-334).

2.02 The *ACD2* System provides optimum call handling performance for a customer with heavy incoming call characteristics (reservation centers, catalog sales, classified advertisement, etc). It provides the capability to efficiently route incoming ACD calls to functional groups (splits) where agents can make reservations, supply information on schedules and rates, or perform any service that the ACD customer wishes to provide. Traffic and performance data are furnished to supervisory personnel so that the agent's work effort can be optimized.

2.03 The *ACD2* System has the capability to serve up to 1000 agents divided into 30 functional groups. The customer can reassign agents to particular function groups to handle special types of calls without wiring changes or rearrangement by the telephone company.

2.04 The *ACD2* offers the customer all the benefits of ESS central office based telephone service plus flexible, modern features. The ACD2 System and related features are described in the following paragraphs. See the applicable feature documents listed in paragraph 1.01 for greater details.

2.05 The *ACD Multiline Group Hunt* feature equitably distributes an ACD customer's ter-

minating traffic among assigned agents. It also provides the capability of controlling the amount and direction of incoming traffic and adjusting the work force available for handling this traffic.

2.06 The *Tones and Announcements to Agents* feature provides the following options:

- (a) The ***zip tone*** option provides a tone to an agent which indicates that a call is going to be terminated at the agents console.
- (b) The ***city-of-origin announcement (COA)*** option provides an audible announcement to the agent identifying the origin of the incoming trunk group.
- (c) The ***audible indication of intraflowed or interflowed calls*** option provides a signal to an agent to indicate receipt of a call. This signal takes the place of zip tone and consists of 100-millisecond tones spaced 100 milliseconds apart for 500 \pm 100 milliseconds.
- (d) The ***daily announcement*** option provides agent dialup access to a customer recorded daily announcement which is provided from customer premises equipment.

2.07 The *ACD Queueing and Call Distribution to Agents* feature provides methods for retaining and sequencing incoming calls and uniformly distributing the traffic load to each agent. Capabilities available are:

- (a) ***Two outflow triggers ("A" and "B")*** are provided to allow a customer to designate primary and secondary serving agents to give help to overloaded queues.
- (b) ***Activation/deactivation of call forwarding variable (CFV) for night directory number (NDN) from a cathode-ray tube (CRT) on the customer's premises*** allows the customer to activate or deactivate the CFV feature via a CRT and also to interrogate any customer directory number (DN) and ascertain its call forwarding state.
- (c) ***Customer changeable inflow/outflow triggers*** enables a customer to change the threshold for a queue to accept calls from other

queues and the thresholds defining when a queue will request help from other queues.

- (d) ***Queueing for trunks and lines (QTL) direct distance dialing (DDD) trunk queueing*** reroutes calls directed to an ACD to another ACD served by a different ESS office when the queue holding time associated with the first ACD exceeds certain outflow thresholds. Rerouting is via the DDD network similar to the method used for remote call forwarding (RCF). Trunk queueing can be used with night transfer or alternate server interflow.
- (e) ***Alternate server intraflow*** places calls on their primary queue but allows them to be serviced by agents associated with other queues in the same office. Where service is by another ACD, access is via lines.
- (f) ***Alternate server interflow*** places calls on their primary queue but allows agents associated with another ACD in the same or different office to serve these calls. Service is via customer dedicated trunks.
- (g) ***Night transfer service*** reroutes calls to some other location via a ***NDN*** when activated via the local night key. The ***NDN*** is changeable via service order or by the customer if the ***NDN*** leads to a line termination and the night line has the ***CFV*** feature.
- (h) ***Priority queueing*** assigns one level of priority to special incoming calls. These priority calls are serviced in order of arrival ahead of nonpriority calls.
- (i) ***Abandoned call search*** ensures that incoming foreign exchange (FX) or tieline calls are not connected to an agent position when the calling party has abandoned after the call is routed to a delay announcement (answer supervision returned).
- (j) An ***inhibit outflow key*** can be provided on a per-queue basis to prevent a queue from requesting help from other queues, regardless of the time limit.
- (k) An ***inhibit inflow key*** can be provided on a queue basis to prevent a queue from accepting calls from other queues, regardless of the holding time of this queue.

2.08 The **Basic Data Link Input/Output (DLIO)** feature provides a software interface between the data link and the call processing and maintenance programs. The DLIO feature allows use of the centrex data link for a wide variety of applications requiring high-speed communications between the ESS and customer premises equipment. The DLIO feature provides the following functions:

- Data link loading procedures for multiple data link orders, increased buffering, and multiple data links to one destination
- Data link unloading procedures which provide for multiple data link types
- An interface for providing Customer Premises System (CPS) functions over a data link
- Maintenance diagnostic and audit changes to interface with new loading and unloading procedures
- Ability to load a large block of data link orders at a regulated rate.

2.09 The **Data Link Sequencing (DLSQ)** feature maintains the integrity of the ACD-ESS Management Information System (AEMIS) by ensuring that messages sent from the ESS to the AEMIS minicomputer over multiple data links arrive in the correct time sequence.

2.10 The **Interface With AEMIS** feature provides minicomputer analysis of agent/traffic data. The minicomputer is located on the customer premises and interfaces with the ESS via one or more data links. The AEMIS produces detailed agent/traffic information, performance calculations, summarized past history, and short term forecasts. The ACD manager has the capability to reconfigure the system when the data indicates that efficiency could be improved by reconfiguration.

2.11 The **ACD Interface With 12A Customer Information System (CIS)** feature provides capabilities similar to the AEMIS, but on a smaller scale. The 12A CIS provides basic call handling information on attendant positions and trunks for the under 150 position market.

2.12 The **ACD2 Agent Log-in** feature (1AE6/1E7 and later) allows an agent to dial a unique

customer-defined identification (ID) code, which the AEMIS translates into the agent's name. The AEMIS feature uses this data to produce various individual performance reports.

2.13 The **Interface With Coordinator Cathode-Ray Tube Terminal** feature is used for system reconfiguration, display, and control. Control and display of the system configuration are provided by a coordinator CRT terminal. The coordinator CRT terminal consists of a CRT display and an alphanumeric keyboard. Hard copy of the displayed information may be obtained using an optional printer.

2.14 The **Interface With 60B CPS** feature provides agents and supervisor equipment through which a large volume of calls can be uniformly distributed to a group of agents. Supervisory personnel are provided with traffic and performance data to efficiently manage the call handling operation. The 60B CPS consists of agents and supervisor consoles (600A), display units (106A1), selector consoles (106A1), calls waiting indicators (beehive), and customer premises cabinet(s) (J59207). Also, a Management Information System that utilizes a mini-computer located on the customer's premises is required. Each cabinet houses the control and interface circuits for up to 50 agents and supervisors.

2.15 The **ACD Line and Interface Maintenance** feature provides sequential and single line demand tests on idle, position busy, or out-of-service ACD lines equipped with agent interface circuits. The sequential tests include all automatic line insulation tests and agent interface circuit tests. Single line tests also include off-hook tests.

2.16 The **Calls Waiting Lamps** feature provides visual indicators (lamps) that indicate the status of calls waiting in queue to be answered. The status of the lamps indicate the length of time a call has been waiting.

2.17 The **Delay Announcements** feature provides for automatic routing of incoming calls to one or more prerecorded announcements when the call is not serviced within a preset time interval. The following options are available.

- (a) The **fixed delay announcements** option provides an announcement to the calling party indicating that there will be a delay before service can be provided. After the call has been on queue

and receiving audible ringing for a predetermined length of time, the calling party receives a 10-second announcement. Following this announcement, the calling party is connected to silence, audible ringing, or customer provided music source at the customer's option. After another predetermined period of time, the call can be connected to another announcement. A maximum of four unique delay announcements can be provided per queue. Announcement content and timing are customer specified and may be changed via service order.

(b) The *flexible first delay announcement* option (also known as load dependent first delay announcement) provides for initially connecting an incoming ACD call to one of two possible delay announcements after being placed in queue. The selection is based upon the time that the longest queued call has been waiting to be serviced. Announcement content and timing are customer specified and may be changed via service order.

2.18 The *Common Systems Recorded Announcement Frame (CSRAF)* feature provides the capability to record announcements from the central office on the frame telephone, a remotely located dedicated CALL DIRECTOR® telephone, or by remote customer access on a dialup basis.

2.19 The *nonusage trunk scanning (NUTS)* report is a summary of customer-leased trunks (trunk network numbers) that have not been found traffic busy during the preceding 2 hours. This printout occurs once every 2 hours on the customer traffic TTY and may also be printed at the central office. An optional NUTS summary report inhibit key may be provided on the customer's premises.

2.20 The *locked-up trunk scanning (LUTS)* report is a summary of facilities that have been on the high and wet list for 2 hours or more. The LUTS summary report is included with the NUTS summary report.

DESCRIPTION

3. USER OPERATION

CUSTOMER

A. System Configurations

3.01 In its most basic configuration, the ACD2 System consists of the 60B CPS, plus the following features.

- Multiline Group Hunt
- Queueing and Call Distribution to Agents
- Tones and Announcements to Agents
- Delay Announcements
- Calls Waiting Lamps
- Basic Data Link Input/Output Control
- Management Information System (AEMIS or 12A CIS).

Options of the above features can be selected as desired by the customer or as required for a particular application. See Part 2.

3.02 Option enhanced capabilities may be included by adding the following features:

- Agent Log-in
- Coordinator CRT terminal.

3.03 Figure 1 depicts the ACD2/ESS interface with all customer premises equipment.

B. Basic System

3.04 The ACD2 System distributes incoming calls uniformly to a number of agents, thus spreading the work load equitably to minimize caller delay and maintain higher agent efficiency. The ACD2 offering uses 600-type consoles for call processing by agents and supervisors plus a Management Information System that utilizes a minicomputer located on the customer's premises. System control and traffic data reports are provided via CRTs. Traffic data reports can also be recorded by a printer or on magnetic tape. One 60B CPS cabinet is required on the customer's premises for every 50 agent consoles. The cabinets provide the central office interface equipment necessary for call processing.

TELEPHONE COMPANY

3.05 Not applicable.

4. SYSTEM OPERATION**HARDWARE****A. General**

4.01 Refer to Part 3 for hardware required on the customer's premises. Hardware required in the ESS office is described below for the applicable feature.

B. 60B CPS

4.02 Centrex data link circuits (SD-1A265) are required to interface with the 60B CPS cabinet.

4.03 An attendant interface frame (J1A089A) is required for the attendant interface circuits (SD-1A353) that provide the communications between the central office and the agent and attendant consoles.

4.04 A master scanner applique circuit SD-1A133 (J1A033FD) is required to provide the connecting of miscellaneous circuits (special purpose control pairs).

4.05 Outgoing trunk circuits for local and tandem reverse battery supervision SD-1A165 (J1A032BB or J1A084BB) are required to provide the monitoring function for supervision consoles.

C. Tone and Announcements to Agents

4.06 The city-of-origin trunk applique unit SD-1A343 (J1A342JS) provides the interface between the recorded announcement circuit and a FX (short haul) trunk circuit.

4.07 Two-way trunk circuits SD-1A358 (J1A033CM) (E&M lead supervision multifrequency) and SD-1A359 (J1A033CN) (E&M lead supervision dial pulsing) are used to provide the City-of-Origin Announcement feature.

4.08 Foreign exchange trunk circuits SD-1A360 (J1A033CP) (for long haul FX trunks) and SD-1A241 (J1A033CF) (for short haul FX trunks) are also used to provide the City-of-Origin Announcement feature.

D. Delay Announcements

4.09 Audible ring and recorded announcement circuits SD-1A221 (J1A033DT or J1A088DT) are

required to provide connecting trunks with nonbarge-in delay announcements.

4.10 Tone and recorded announcement circuits SD-1A218 (J1A032DC or J1A084DC) are required to connect music or silence to incoming ACD call lines while on queue.

E. Calls Waiting Lamps

4.11 A single distributor applique circuit SD-1A146 (J1A033FH) is required to carry out the function of closing a metallic path to operate calls waiting lamps.

F. Recorded Announcement Frame

4.12 A recorded announcement frame J1A058A, J1A058C, J1C012D (CSRAF) provides the circuit characteristics required by the 2-way and FX (long haul) trunk units.

G. Management Information System

4.13 Centrex data link circuits (SD-1A265) are required to interface with the AEMIS or 12A CIS.

OFFICE DATA STRUCTURES

Note: Office data structures for ACD2 features and related features, covered by separate documentation, are briefly described in this part. For detailed information and layouts, refer to the applicable documents listed in paragraph 1.01.

A. Translations

4.14 The **Interface With 60B CPS** feature consists of the following:

- Remote data interface port translator
- Remote data key signal translator
- Data group translator
- Mask block translator
- Line equipment number auxiliary block
- Listed directory number auxiliary block
- Multiline group common block

- Directory number auxiliary block
 - Visual display translator
 - Lamp group translator.
- 4.15** The *Tones and Announcements to Agents* feature consists of the following:
- Directory number auxiliary block
 - Line equipment number auxiliary block
 - Multiline group common block
 - Trunk group number auxiliary block
 - Trunk class code expansion table
 - Trunk network number to peripheral equipment number auxiliary block
 - Data type 5, subtype 23 word.
- 4.16** The *Delay Announcements* feature consists of the following:
- Unit type 55 auxiliary block
 - Unit type 47 auxiliary block
 - Trunk network number-to-trunk group number auxiliary block
 - Master scanner primary translation word
 - Route index expansion table
 - Listed directory number auxiliary block
 - Trunk network number-to-peripheral equipment number auxiliary block
 - Trunk class code expansion table.
- 4.17** The *ACD Queueing and Call Distribution to Agents* feature consists of the following:
- Unit type 55 auxiliary block
 - Alternate server pool translator
 - Unit type 54 auxiliary block
- Directory number auxiliary block
 - Line equipment number auxiliary block
 - Simulated facilities group number auxiliary block
 - Trunk group auxiliary block.
- 4.18** The *Calls Waiting Lamps* feature consists of the following:
- Centrex console group head cell, word 7
 - Centrex common block, word 20
 - Unit type 55 auxiliary block
 - Lamp group translator
 - Unit type 29 auxiliary block
 - Data link group translator.
- 4.19** The *Common Systems Recorded Announcement Frame* feature consists of the following:
- Master scanner number translator
 - Unit type 23 auxiliary block
 - Trunk network number—peripheral equipment number auxiliary block
 - Trunk group supplementary auxiliary block
 - Centrex digit interpreter table words.
- B. Parameters/Call Store**
- 4.20** The *Interface With 60B CPS* feature consists of the following:
- CBLT—ACD-CO supervisor call back list
 - AQLTHT—Automatic queue trunk line head tables
 - SHCE—Supplementary head cell for queue trunk line queueing
 - MRCC—Hotel/motel message register and cashier console

- QRG—Queueing registers for trunks and lines
- CLDSPT—Calling line display table
- CRTOR—Cathode-ray tube originating registers
- LMPG—Lamp group block
- OTBF—Output buffer
- DLGB—Data link group block
- LKPB—Data link pointer block
- BDLL—Block data link loading scratch area
- CRT—Cathode-ray tube message storage buffer.

4.21 The *Tones and Announcements to Agents* feature consists of the following:

- CF—Conference registers
- OR—Originating registers
- NRR—Regular ringing registers.

4.22 The *Delay Announcements* feature consists of the following:

- AQTLHT—Automatic queue trunk line head table.

4.23 The *ACD Queueing and Call Distribution to Agents* feature consists of the following:

- M5INT2—Alternate server interflow parameter
- M5MILH—Automatic queue for trunks and lines parameter
- M5SHCE—Supplementary head cell for queue trunk and line queueing parameter.

4.24 The *Calls Waiting Lamps* feature consists of the following:

- I4CF—Conference senior registers
- B6PORT—3-port traffic counts.

4.25 The *Common Systems Recorded Announcement Frame* feature consists of the following:

- J6CSRAF—Common systems recorded announcement frame control blocks
- B6CSRF—Common systems recorded announcement frame remote access peg count pointer.

FEATURE OPERATION

4.26 When a call is made to one of the listed directory numbers (LDNs) assigned to the ACD customer, the DN translator returns with the queue number onto which the call is to be loaded. If that queue number is in the night transfer state (activated via the NIGHT key located on the 106A1-A selector console), then that incoming call will be routed to a NDN. This NDN may be in another functional group, in another ACD, or to a group of telephones as predesignated by the ACD customer. If the queue is not on night service and is found to be full, the calling party will receive busy tone. If that queue is not on night service and there is space on the queue, a check is made to determine if the calling party is entitled to priority service.

4.27 A call has priority if the DN dialed has the priority bit set in its DN translation or the incoming line or trunk has the priority bit set (in the LEN for a line and in the screening LEN for a trunk). If a call is entitled to priority service, the call is placed on queue in front of nonpriority calls; otherwise, the call is loaded at the end of the queue. After being placed on queue, the calling party is given audible ringing.

4.28 If the ACD customer has the Delay Announcements feature and a call remains on queue after a predetermined time interval is exceeded, the calling party will receive a delay announcement. The ACD customers may purchase from one to a maximum of four delay announcements per queue and specify the content of each message and the time intervals between announcements.

4.29 A facility that will provide the best service is then selected. This facility can be an agent console in the primary functional group (as specified by the LDN), an agent console in an alternate functional group (intraflow), or a trunk in an outgoing trunk group (interflow).

- 4.30** If the selected facility requires interflow (a trunk facility), a trunk is seized going to the distant ACD System, and outpulsing is performed. After receiving answer report from the far-end ACD, call origin identification (audible) is supplied to the agent (if applicable). The talking path is then completed between the calling party and the agent. If the selected facility is not a trunk facility (ie, an alternate functional group or the primary functional group), an ACD multiline hunt is performed to find an idle agent console.
- 4.31** Active queues (those which have at least one idle console in the associated functional group) are unloaded periodically. Before a call is unloaded from the queue, an ACD multiline group hunt must be performed to determine the most idle agent console in the functional group. Each functional group is assigned a block of call store in the H8MRCC data area. This call store area is the functional group assignment block for the multiline group hunt activity block. Each bit in the functional group assignment block corresponds to a particular agent console in the ACD. That bit is set (equal to 1) in the mask block corresponding to the functional group to which the agent console is assigned and is reset (equal to 0) in all other functional groups.
- 4.32** When a call is unloaded from the queue, the functional group assignment block associated with the functional group to which the call is to be completed is accessed. The first word of this block contains the start hunt pointer which indicates the terminal (agent console line) with which the hunt is to begin. The hunt then proceeds to obtain the most idle agent console that is assigned to that particular functional group.
- 4.33** When an idle console is found, the activity bit corresponding to that console is updated to indicate its busy status, and the ringing connection is established. The start hunt pointer in the functional group assignment block is then updated to point to the next available agent console.
- 4.34** An abandoned call search is performed on all incoming FX and tie trunks that have received delay announcement(s) before connection is made to an agent. If an on-hook indication is returned from the originating office (indicating abandon), the call is removed from the system and the trunk is not connected to the agent console. If the calling party is found in the off-hook condition, processing is continued.
- 4.35** If the call entered the central office via a FX or tie trunk and the ACD customer has the visual call identification feature, the visual display will be obtained from the trunk group number (TGN) supplementary auxiliary block. For all other calls, the display will be obtained from the DN auxiliary block for the listed DN dialed.
- 4.36** Before applying the actual ringing current to the agent console, relay A is operated in the agent interface circuit associated with the agent console. This action cuts through the applique circuit and allows a ringing current to pass to the agent console. When the console recognizes the 20-Hz ringing signal, it automatically trips, sending an answer signal back to the ESS. When the ESS recognizes the answer signal, a 0.5 ± 0.1 second burst of zip tone (at 480 Hz) is applied to the agent line. This is accomplished by operating relay B and releasing relay A in the line applique circuit. Zip tone alerts the agent that an incoming ACD call is terminated at that console.
- 4.37** After receiving zip tone (if applicable), the translations for that ACD customer are checked to determine if audible call origin identification should be provided. These features inform the agent of the city from where the incoming call originated. The ESS determines whether the call is entering the office via a FX or tie trunk, normal DDD network, inward wide area telecommunications service, or local line. If the call is on a facility that does not have the audible announcement capability, the announcement is provided via relay A operating (while relay B, operated during zip tone, is still activated). If the incoming ACD call is on a trunk that has the announcement capability, the agent will be given city-of-origin announcement via the incoming facility. At the conclusion of the city-of-origin announcement (or zip tone if city-of-origin announcement is not subscribed to), the applique circuit is switched to the talking state by releasing relay B in the applique circuit.
- 4.38** Once an ACD call has been terminated to an agent position, the attendant can provide the calling party with a service or perform any function that the agent console is capable of providing.

CHARACTERISTICS

5. FEATURE ASSIGNMENT

- 5.01** The ACD2 feature is provided on a per-customer group basis.

6. LIMITATIONS

OPERATIONAL

6.01 Not applicable.

ASSIGNMENT

A. Central Office

6.02 A No. 1 or 1A ESS central office may have a maximum of 63 ACD customers. Although a maximum of 63 ACD customers per central office is possible, this limitation depends upon the sum of the total memory usage of all ACD customers in that central office.

6.03 The total number of functional groups handled by any single No. 1 or 1A ESS central office cannot exceed 255.

B. ACD Customer

6.04 An ACD customer can have a maximum of 31 functional groups (including the maintenance functional group).

6.05 An ACD customer can have the following equipment maximums:

- 1000 agent and supervisor consoles
- 30 CRT keyboards.

6.06 Refer to individual documents, as outlined in paragraph 1.01, for detailed information on specific limitations and restrictions.

7. INTERACTIONS

STATIC

7.01 Not applicable.

DYNAMIC

7.02 The circular hunting scheme used for the Uniform Call Distribution (UCD) feature is modified to consult the functional group assignment blocks prior to determining the next available agent console. Each agent console appears to the system as a centrex station; thus, the UCD features are necessary to provide ACD-ESS service.

8. RESTRICTION CAPABILITY

8.01 The ACD2 System consists of many independent features that are combined to provide a complete system. Each subfeature has the capability of being restricted by software and/or hardware modifications. Refer to documents outlined in paragraph 1.01 for detailed information on specific restriction capabilities.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 Refer to documents, outlined in paragraph 1.01, for detailed information concerning installation/addition/deletion procedures.

10. HARDWARE REQUIREMENTS

Note: This part contains cost factors and determination of quantities. Central Office Equipment Engineering System (COEES) Planning and Mechanized Ordering Modules are the recommended procedures for developing these requirements. However, for planning purposes or if COEES is not available, the following guidelines may be used.

CENTRAL OFFICE

10.01 **Line Side Equipment:** The attendant interface frame (AIF) (J1A089A) provides the interface with the customer premises equipment. This 2 foot 2 inch frame is equipped with 15 plug-in chassis mounting units. These units are the frame control panel, frame fuse panel, two terminal strip units, and a frame filter. The attendant interface frame is capable of mounting up to 60 attendant interface units with two attendant interface circuits per unit (120 attendant interface circuits per frame). The attendant interface circuits (SD-1A353-01) provide the link between the central office and the customer premises equipment. The attendant interface frame comes equipped with duplicated power (30 attendant interface units per power distribution bus).

10.02 **Trunk Side Equipment:** Two 2-way trunk circuits are used to provide the city-of-origin announcement. They are SD-1A358-01 (2-way trunk E&M lead supervision multifrequency) (order code 08400) and SD-1A359-01 (2-way trunk E&M lead supervision dial pulsing) (order codes 08500, 08501).

Each of the 2-way trunk units is a 6- by 25-inch unit mounted on the miscellaneous trunk frames (J1A033C).

10.03 Two FX trunk circuits are used to provide the city-of-origin announcement. They are SD-1A360-01 (for long haul FX trunks) (order codes 15800, 15801) and SD-1A241-01 (for short haul FX trunks) (order code 03122). Both of these FX units are mounted on the miscellaneous trunk frames (J1A033C). When the short haul unit is associated with the ACD service, four FX units must be mounted in a standard configuration with a city-of-origin trunk applique unit (SD-1A342-01) (order code 20000) to facilitate sequential assignment of signal distributor points.

10.04 The city-of-origin trunk applique unit (SD-1A342-01) provides the interface between the recorded announcement circuit and a FX (short haul) trunk circuit.

10.05 A recorded announcement circuit (SD-1A139-01 or SD-97725-03) provides the circuit characteristics required by the 2-way and FX (long haul) trunk units used for city-of-origin announcements.

CUSTOMER PREMISES EQUIPMENT

10.06 The 60B Customer Premises System cabinet (J-59207) provides the interface with the ESS central office. Each cabinet is capable of containing circuitry for up to 50 agent and/or supervisor positions.

11. SOFTWARE REQUIREMENTS

Note: This part contains cost factors and determination of quantities. Central Office Equipment Engineering System (COEES) Planning and Mechanized Ordering Modules are the recommended procedures for developing these requirements. However, for planning purposes or if COEES is not available, the following guidelines may be used.

MEMORY

A. No. 1 ESS

Fixed

11.01 The *base generic program (program store)* memory requirements, whether or not the feature is used, are as follows.

- Calls Waiting Lamps—approximately 750 words
- Delay Announcements—approximately 1300 words
- Tones and Announcements to Agent—approximately 10 words for zip tone and 15 words for city-of-origin announcement
- ACD Queueing and Call Distribution to Agents—approximately 4096 words
- Basic Data Link Input/Output Control—approximately 150 words
- AEMIS—approximately 150 words
- 12A Customer Information System—approximately 150 words.

Conditional

11.02 Table A provides a list of feature groups and their associated feature packages required in *program store* to implement the ACD2 in No. 1 ESS.

11.03 The following *call store* memory is required.

(a) The *ACD Queueing* feature requirements are as follows:

- (1) The length of the alternate server interflow overload block (ASOB) is two times the number of alternate server pools (ASP) in the office plus two.
- (2) The length of the head cell block is 16 times the value of set card AQTLG ($1 \leq \text{AQTLG} \leq 225$) plus 16.
- (3) A block of the call store space equal to the total number of 14-word queueing registers is required (specified by set card NQR).
- (4) The QTL head cell (set card AQTLG) requires a constant 16 words plus 16 words (call store table AQTLHT) per queue.
- (5) When the office has data link sequencing, a simulated facilities link index (SFLI) table

TABLE A
PROGRAM STORE MEMORY

FEATURE GROUP	FEATURE PACKAGE (NOTE)			1E7		1AE6
	NO.	ACRONYM	NAME	PACKAGE WORDS	CODE WORDS	CODE WORDS
ACD2	4	ACD*	Automatic Call Distribution	2496	2801	3200
	27	SIG*	TOUCH-TONE® (Service) Key Signaling	256	201	320
	39	BASI*	Basic ASI Intra/Interflow for QTL Customers	448	395	608
	40	BQNS*	Basic QTL Queueing Night Transfer Service	192	163	256
	41	BTRK*	Basic Intra/Interflow QTL Trunk Termination Code	1920	1679	2656
	43	HINF*	General Intra/Interflow Logic for QTL Customers	512	441	608
	45	QPRI*	Priority QTL Queueing	192	111	160
	48	DDDT*	Direct Distance Dialing Terminations	192	145	256
	49	MIS1	Management Information System	2352	2189	2976
	50	ACD2	Automatic Call Distribution Phase 2	5440	5253	6784
—	PTDT	Prevent Terminating Disconnect Timing	120	42	96	
DLIO	54	DLIO	Data Link Input/Output	5248	5053	7232
DLSQ†	95	DLSQ*	Data Link Sequencing	1728	1692	2240
IRES	19	IRES*	Inquiry and Response System	4800	4509	6208
CRAF	53	CSRAF	Common Systems Recorded Announcement Frame	3250	3033	4288
RCXI	86	RCXI*	Recent Change Digit Interpreter	1728	1692	2240

Note: The arithmetic difference between package words and code words is patch space.

* Feature packages are shared between two or more feature groups.

† The DLSQ feature group is only required when a central office has an ACD2 AEMIS minicomputer customer. No right-to-use fee is charged.

is required. Its length is the value of set card NSF divided by four.

(6) When the office uses set card SFLA (simulated facilities line number activity words), a pseudo trunk number displacement (PTND) table is required. Its length is half the value of set card SFG.

(b) For the **Delay Announcement** feature, the general purpose register and QTL head cell

are shared with queueing. Each requires four words when the feature is activated.

(c) The **Calls Waiting Lamps** feature requires 10 words per lamp group defined by set card NLB.

(d) The **Data Link Input/Output Control** feature requires three words per data link group (DLG) plus the following, depending upon data link type (DLTYPE).

- For DLTYPE = 1, add 59 words.
- For DLTYPE = 2, add 63 words.
- For DLTYPE = 3 (1E4/1AE4), add $65+4\times A$. For generic 1E5/1AE5 and later, add $93+4\times A$, where A = number of hunt lists in ACD multiline hunt group (MLHG) associated with the DLG.
- For DLTYPE = 4, add 55 words.

Variable

11.04 The following *translations (program store)* memory is required when the features are provided on a per-customer basis.

(a) The **ACD Multiline Group Hunt** feature requirements are:

- (1) The MLHG common block requires 17 words per customer.
- (2) The DN auxiliary block requires six words per terminal plus six words per LDN.
- (3) The line equipment number (LEN) auxiliary block requires 10 words per terminal.
- (4) The hunt list requires 17 words per 16 terminals.
- (5) The master scanner number (MSN) translation requires four words per terminal, if equipped for terminal make busy.
- (6) The data group (DAG) translator requires $2+(20+A+B)\times C$ words, where A = number of splits/2; B = number of reporting group/2; C = number of DAGs.
- (7) The mask block translator requires $2+(A\times B)\times(2+D)$ words, where A and B are as defined above and D = integer ($\lceil \text{number of MLHG terminals} \rceil / 16$).

(b) The **Tones and Announcement to Agents** feature requirements are:

- (1) The DN auxiliary block requires one additional word.
- (2) The LEN auxiliary block requires two additional words.

- (3) The trunk group (TG) auxiliary block requires one word per TG.
- (4) The trunk class code (TCC) expansion table requires four words per trunk type.
- (5) The trunk network number (TNN) to peripheral equipment number (PEN) requires four words.
- (6) The route index expansion table requires two words for the route index.
- (7) The TGN primary table requires one word.
- (8) The centrex common block requires one word for the first level of access code digit interpretation. If additional digit interpretation is required, a 15-word table is required for each level of digit interpretation.

(c) The **ACD Queueing and Call Distribution to Agent** feature requirements are:

- (1) The unit type 55 translator (UTYP 55) requires 13 words (1E3) and 18 words (1E4 and later).
- (2) The unit type 54 translator (UTYP 54) requires three words per queue with night transfer, three words per queue with inhibit inflow, and 3 words per queue with inhibit outflow.
- (3) The alternate server pool translator requires $2+E\times(F+2)$ words, where E = number of ASP groups and F = (number of queues in ASP-1)/2.
- (4) The DN auxiliary block requires six words if simulated facilities are used for interflow.
- (5) The simulated facilities groups (SFGs) require four words per SFG.

(d) The **Basic Data Link Input/Output Control** feature requirements are:

- (1) The unit type 29 translator (UTYP 29) auxiliary block requires 18 words per data link (centrex consoles) and 8 words per data link (noncentrex consoles).
- (2) The DLG translator requires two words per data link group and one word per data link.

(e) The **AEMIS** feature requirements are:

- (1) The UTYP 55 requires two words (shared).
- (2) The MLHG common block requires one word.
- (3) The SFG requires one word (shared).
- (4) The TGN supplementary auxiliary block requires one word (shared).
- (5) The remote data interface (RDI) port translator requires one word (shared).
- (6) The UTYP 29 auxiliary block requires one word.
- (7) The DLG translator requires one word.

(f) The **Agent Log-in** feature requirement is two words per digit interpreter auxiliary block.

(g) The **ACO Interface with 12A Customer Information System** feature requirements are:

- (1) The UTYP 55 auxiliary block requires two words (shared).
- (2) The MLHG common block requires one word.
- (3) The SFG auxiliary block requires one word.
- (4) The TG supplementary auxiliary block requires one word (shared).
- (5) The RDI port translator requires one word (shared).
- (6) The UTYP 29 auxiliary block requires one word.
- (7) The DLG translator requires one word.

B. No. 1A ESS

Fixed

11.05 The **base generic program (program store)** memory requirements, whether or not the feature is used, are as follows:

- Calls Waiting Lamps—approximately 950 words

- Delay Announcements—approximately 1700 words
- Tones and Announcements to Agents—approximately 15 words for zip tone and 20 words for city-of-origin announcement
- ACD Queueing and Call Distribution to Agents—approximately 5563 words
- Basic Data Link Input/Output Control—approximately 200 words
- AEMIS—approximately 190 words
- 12A Customer Information System—approximately 210 words.

Conditional

11.06 Table A provides a list of feature groups and their associated feature packages required in **program store, file store** to implement the ACD2 in No. 1A ESS.

11.07 The **duplicated call store** requirements are identical to No. 1 ESS call store requirements. See paragraph 11.03.

Variable

11.08 The **translations (unduplicated call store, file store)** requirements are identical to No. 1 ESS call store requirements. See paragraph 11.04.

REAL TIME IMPACT

11.09 For the real time impact of the various features comprising an ACD2 System, refer to the applicable document listed in paragraph 1.01.

12. DATA ASSIGNMENTS AND RECORDS

12.01 Refer to documents outlined in paragraph 1.01 for detailed information concerning data assignments and records.

13. TESTING

13.01 Refer to documents outlined in paragraph 1.01 for detailed information concerning testing procedures.

14. OTHER PLANNING TOPICS

14.01 Not applicable.

ADMINISTRATION**15. MEASUREMENTS**

15.01 Refer to paragraph A(16) in Part 18 and to documents outlined in paragraph 1.01 for detailed information concerning traffic measurements.

16. CHARGING**AUTOMATIC MESSAGE ACCOUNTING**

16.01 Refer to documents outlined in paragraph 1.01 for detailed information concerning charging procedures.

UNIFORM SERVICE ORDER CODES

16.02 Consult the telephone company uniform service order codes (USOCs) coordinator or refer to the AT&T USOC Manual for the USOCs applicable to ACD2.

SUPPLEMENTARY INFORMATION**17. GLOSSARY**

17.01 The following terms are defined as applicable to the ACD2 System.

Functional Group—A functional group (split) is a grouping of agents assigned to handle one particular type of call.

Interflow—The redirecting of calls to other customer facilities (queues or agents) located in a different ACD system (either in the same or different central office).

Intraflow—The redirecting of calls to other customer facilities (queues or agents) located in the same ACD system (within the same central office).

Load Compensating Packages (LCPs)—The LCPs are predetermined agent position configurations that can be activated via the CRT/keyboard to accommodate changes in the volume of incoming ACD traffic due to lunch hours, holidays, weekends, etc.

18. REFERENCES

18.01 The following documents contain information pertaining to or affected by the ACD2 feature.

A. Bell System Practices

- (1) Section 231-090-336—Feature Document—ACD Multiline Group Hunt Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (2) Section 231-090-338—Feature Document—Tones and Announcements to ACD Agents Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (3) Section 231-090-339—Feature Document—ACD Queueing and Call Distribution to Agents Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (4) Section 231-090-412—Feature Document—Basic Data Link Input/Output Control Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (5) Section 231-090-413—Feature Document—Interface With ACD-ESS Management Information System Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (6) Section 231-090-415—Feature Document—ACD Phase 2 Agent Log-in Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (7) Section 231-090-418—Feature Document—ACD Interface With 12A Customer Information System Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (8) Section 231-090-421—Feature Document—Interface With Coordinator Cathode-Ray Tube Terminal Feature—Automatic Call Distribution—Phase 2—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (9) Section 231-090-423—Feature Document—Interface With 60B Customer Premises System Feature—Automatic Call Distribution—Phase 2—2-Wire No. 1 and No. 1A Electronic Switching Systems
- (10) Section 231-090-052—Feature Document—Automatic Line Insulation Test Feature—

SECTION 231-090-399

2-Wire No. 1 and No. 1A Electronic Switching Systems

(11) Section 231-090-082—Feature Document—Calls Waiting Lamps Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(12) Section 231-090-123—Feature Document—Delay Announcements Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(13) Section 231-090-411—Feature Document—Interface With Common Systems Recorded Announcement Frame Feature—2-Wire No. 1 and No. 1A Electronic Switching Systems

(14) Section 231-167-003—Automatic Call Distribution—Translations—2-Wire No. 1 Electronic Switching System (Task Oriented Practice)

(15) Section 231-367-003—Automatic Call Distribution—Translations—2-Wire No. 1A Electronic Switching System (Task Oriented Practices)

(16) Section 533-205-600—ACD-ESS Phase 2—Traffic Measurements

(17) Section 533-205-601—ACD-ESS Phase 2—Traffic Engineering.

B. TTY Input and Output Manuals

(1) Input Message Manual IM-1A001—2-Wire No. 1 Electronic Switching System

(2) Output Message Manual OM-1A001—2-Wire No. 1 Electronic Switching System

(3) Input Message Manual IM-6A001—2-Wire No. 1A Electronic Switching System

(4) Output Message Manual OM-6A001—2-Wire No. 1A Electronic Switching System.

C. Other Documentation

(1) Translation Guide TG-1A—2-Wire No. 1 and No. 1A Electronic Switching Systems

(2) Office Parameter Specification PA-591001—2-Wire No. 1 Electronic Switching System

(3) Parameter Guide PG-1—2-Wire No. 1 Electronic Switching System

(4) Office Parameter Specification PA-6A001—2-Wire No. 1A Electronic Switching System

(5) Parameter Guide PG-1A—2-Wire No. 1A Electronic Switching System

(6) Translation Output Configuration PA-591003—2-Wire No. 1 Electronic Switching System

(7) Translation Output Configuration PA-6A002—2-Wire No. 1A Electronic Switching System

(8) PK-6A006—Call Store Data Layout—No. 1A Electronic Switching System

(9) BISP 759-100-000—Subject Index—Central Office Equipment Engineering System (COEES)—Business Information System Programs

(10) BISP 759-100-100—General Description—Central Office Equipment Engineering System (COEES)—Business Information System Programs.

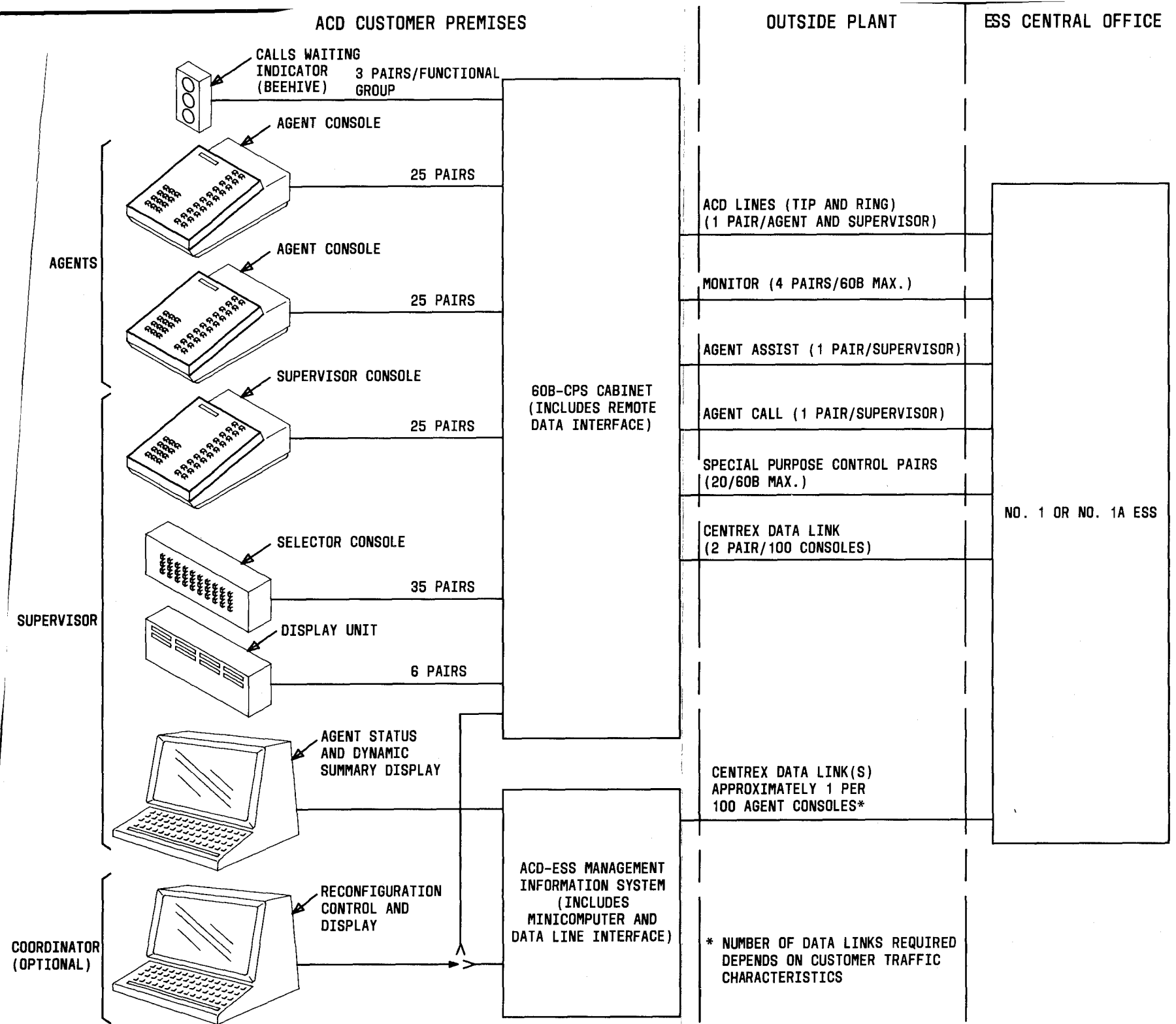


Fig. 1—ACD2 Customer/ESS Central Office