1A VOICE STORAGE SYSTEM

INTRODUCTION

NETWORK SWITCHING ENGINEERING

PROCESSOR CONTROLLED AND ANCILLARY SYSTEMS

CONTENTS PAGE

1. GENERAL

1.01 This section serves as an introduction to the 1A Voice Storage System (VSS), its purpose, general structure and the impact of traffic on that structure.

1.02 Whenever this section is reissued, the reason(s) for reissue will be listed in this paragraph.

1.03 References in this section to methods, planning, data requirements, service levels, and equipment quantities are based on American Telephone and Telegraph Company recommendations.

1.04 The VSS is a processor-controlled system that can receive, store, administer, and deliver voice announcements, greetings and messages.

1.05 Internal operation and storage is essentially digital. Through digital/analog voice, analog voice/digital conversion, it provides a high quality voice reproduction for a variety of voice message services (see paragraph 2.03 and 2.04). Duplicated processing and storage units provide service protection. VSS is a centralized system and may be shared by subscribers from a number of local Electronic Switching System (ESS) central offices. Specialized customer premise equipment is not required.

1.06 The call sequences described herein are for purposes of introduction to the system and therefore are very general in nature. More detailed call sequence formats are covered in Section 255-061-020, "Functional System Description". Additional Network Switching Engineering sections applicable to the traffic engineer are:

- 255-061-030 Traffic Order Preparation
- 255-061-040 3A Processor Capacity Determination
- 255-061-050 Capacity Determination
- 255-061-060 Traffic Measurements
- 255-061-080 Traffic Order Worksheets

1.07 Details of equipment arrangements and operation may be found in the following Sections:

- 255-102-XXX Equipment Description

- 255-103-XXX Software Description
- 255-021-0XX Network Administration.

2. PURPOSE OF THE SYSTEM

2.01 The purpose of the Voice Storage System (VSS) is to permit an offering of a variety of voice message services. Initial service offerings may change in structure and new service offerings may be made in the future which the VSS is capable of serving.

2.02 The services to be offered initially in VSS are an expansion of Custom Calling Services offered in the ESS offices (Call Forwarding, Call Waiting, 3-Way Calling, etc) which will now be known as Custom Calling Services I (CCS I).

2.03 The initial development of VSS will provide the capability to introduce Custom Calling Services II (CCS II) and Custom Announcement service.

2.04 ***CCS II*** consists of:

(1) ***Call Answering*** provides automatic recording of a ***message*** left by a calling party ***(caller)*** after hearing a ***greeting*** left by the subscriber. The ***greeting*** may be personalized by the subscriber or selected from a standard format. The subscriber may retrieve the messages at a later date.

(2) ***Advance Calling*** allows a subscriber to leave a voice ***message*** that will be forwarded to a designated telephone number at a later time. The delivery time may be determined by either the subscriber or the system. The VSS will attempt to deliver the message several times over some specified time interval. The calling subscriber may check the delivery status of a message.

2.05 ***Custom Announcement*** service is similar to Call Answering except that the ***caller*** may not leave a message.

> ***NOTE:*** It should be noted that the names of the services actually tariffed and marketed when VSS is available may differ from the service names used in this document. The service descriptions are not intended to be complete. Full detailed descriptions of the services and their limitations can be found in local tariffs.

2.06 Subscribers to these services must be assigned to either a No. 1 ESS equipped with a 1E(B6)6 or later generic program or a No. 1A ESS equipped with 1AE6 or later generic program. The serving central office will be referred to as the ***client office.*** . The subscriber may have either a rotary dial or TOUCH-TONE® instrument.

3. SYSTEM OVERVIEW

3.01 Figure 1 presents a quick look at the Voice Storage System (VSS).

3.02 Subscribers in the client offices access or are accessed by the VSS via ***dedicated, single route, 2-way trunk groups*** between each client office and the VSS.

3.03 The trunk termination in the VSS is a VSS trunk which is part of the Trunk Access Circuit (TAC). The TAC also contains a TOUCH-TONE receiver and a Coder/Decoder (CODEC). The TOUCH-TONE receiver receives instruction code(s) from the subscriber. The CODEC converts analog voice to digital and digital to analog voice for the storage and retrieval of voice messages. The TAC, in turn, is a part of the larger Voice Access Circuit (VAC). In addition to the TAC, the VAC contains a buffer that is used to interface the high digital speed of the Storage Subsystem and the low digital speed of the CODEC.

3.04 A Voice Access Circuit Unit (VACU) may contain 1-16 VAC's. The VAC/VACU provides the first stage access of the Voice Message Controller (VMC) Switch for the Storage Subsystem and of the Service Access Matrix (SAM) for the Service Circuits.

3.05 The Storage Subsystem consists of the Voice Message Controller (VMC) and the digital storage modules known as Disk Transports (DT).

3.06 The SAM provides access to Multifrequency (MF) receivers and transmitters and test circuits.

3.07 Controls between the TAC and SAM and the TAC and 3A Central Control (3ACC) are exercised by the TAC-Matrix Scanner Controller (TMSC) and the Peripheral Control Unit (PCU).

3.08 The control of the total system is exercised by the Auxiliary Processor which consists of a 3A CC and Main Store (MAS). Directive and administrative operations are under the supervision of the 3A CC via bus systems. Operations for subscriber or interprocessor signalling are controlled via the Peripheral Control Frame. Operations for voice transfer are controlled via the VMC.

3.09 Automatic message accounting data is transmitted via data link to an Automatic Message Accounting Recording Center (AMARC). Additional interfaces with Switching Control Center System (SCCS), Engineering and Administration Data Acquisition System (EADAS), Western Electric Co. Product Engineering Control Center (PECC), and traffic and maintenance teletypewriters (TTY) are provided.

4. COMMON CALL OPERATIONS

4.01 In order to gain a better understanding of the operational interrelationships of the various equipment components, refer to Fig. 1 while reading the following paragraphs.

A. Activate and Deactivate

4.02 First the subscriber must activate the service. This is accomplished by dialing designated codes. The client office translates these codes as a request for VSS access and seizes a trunk to VSS.

4.03 A service request message is sent from the client office to the VSS Trunk Access Circuit (TAC) and then to the Service Circuits via the SAM. The request is translated by the 3A CC.

4.04 An acknowledgement routine is directed by the 3A CC. The acknowledgement to the subscriber may take the form of a system announcement called a "prompting announcement." This usually consists of a voice acknowledgement accompanied by instructions to the subscriber.

4.05 The 3A CC institutes the announcement via the Voice Message Controller (VMC). The VMC retrieves the announcement from its storage location on a Disk Transport (DT). The VMC sends the announcement in digital form to the Voice Access Circuit (VAC) buffer via the VMC switch.

4.06 The Coder/Decoder in the TAC converts the digital bits to analog voice and the prompting announcement is returned to the subscriber in the client office via the same 2-way trunk over which activations were requested. Call Answering and Custom Announcement Services require that activation information be returned to the client office. These signals are initiated by the subscriber's dialing an activate code as requested in the prompting announcement. The VSS 3A CC then seizes a second trunk to the client office, formats the activation information and sends the information to the client office via the Service Circuits and TAC.

4.07 Deactivation operations take generally the same signalling and voice procedures as activation. Deactivation is initiated when the subscriber to the service dials a deactivation code. The 3A CC institutes the required deactivation routine of announcements and signalling.

B. Recording

4.08 The need for recording of either greetings or messages is recognized by the 3A CC through signalling received from the subscriber or the client office. The signalling may consist of a subscriber dialed code(s) or a client office generated interprocessor signal that a message needs recording access. Subscriber signalling is passed from the Trunk Access Circuit to the 3A CC. Prompting announcements giving directions for recording are returned to the subscriber or caller (see activate procedure above). Upon receipt at the VSS the voice greeting/message is converted to digital format by the CODEC in the VAC. The digitized greeting/message is forwarded to the VMC via the VAC Buffer and the VMC Switch. Under the control of the 3A CC and the VMC, the message is stored on a Disk Transport (DT). The 3A CC stores a duplicate of the greeting/message on another VMC and DT at a later time.

C. Replay

4.09 Replay of recorded greetings/messages is initiated by the subscriber's dialing the proper codes. Replay is instituted by the 3A CC. The 3A CC seeks the VMC and DT storage location of the greeting/message. The VMC, via the VMC switch, transfers the digitized voice to the buffer associated with the VAC on which the replay request has been made. The CODEC of that VAC decodes

the digitized signals to analog voice and the voice message/greeting is returned to the subscriber in the client office.

5. GLOSSARY

Caller

A calling party whose call has been intercepted and routed to VSS.

Client Office

The ESS office connected to the VSS office; connection is made via VSS access trunks.

Greeting

A greeting is a voice recording returned to a terminating caller when the call has been intercepted by VSS. The greeting may have been recorded by the operating telephone company (standard greeting) or by the customer using the service (personal greeting).

Interprocessor Signalling

The multifrequency digit packets providing the exchange of information between the VSS and client office processors. The information consists of directory number identification billing information, identification of requested service, etc.

Message

A message is that voice recording left by a caller encountering Call Answering service or, by a calling customer using the Advance Calling service provided by VSS.

Prompting Announcement

A prompting announcement is one of a special set of VSS announcements which will assist a subscriber in using VSS.

System Announcements

Voice announcements designed to inform subscribers, callers and called parties regarding the status of their contact with the Voice Storage System. The information conveyed may be indicative of: system error, customer error, instructions for service use, etc.

Subscriber

The subscriber to Voice Storage services is the user of one of the services. Use may be instituted by service order or by dialing one of the various service access codes for those services not requiring a service order.

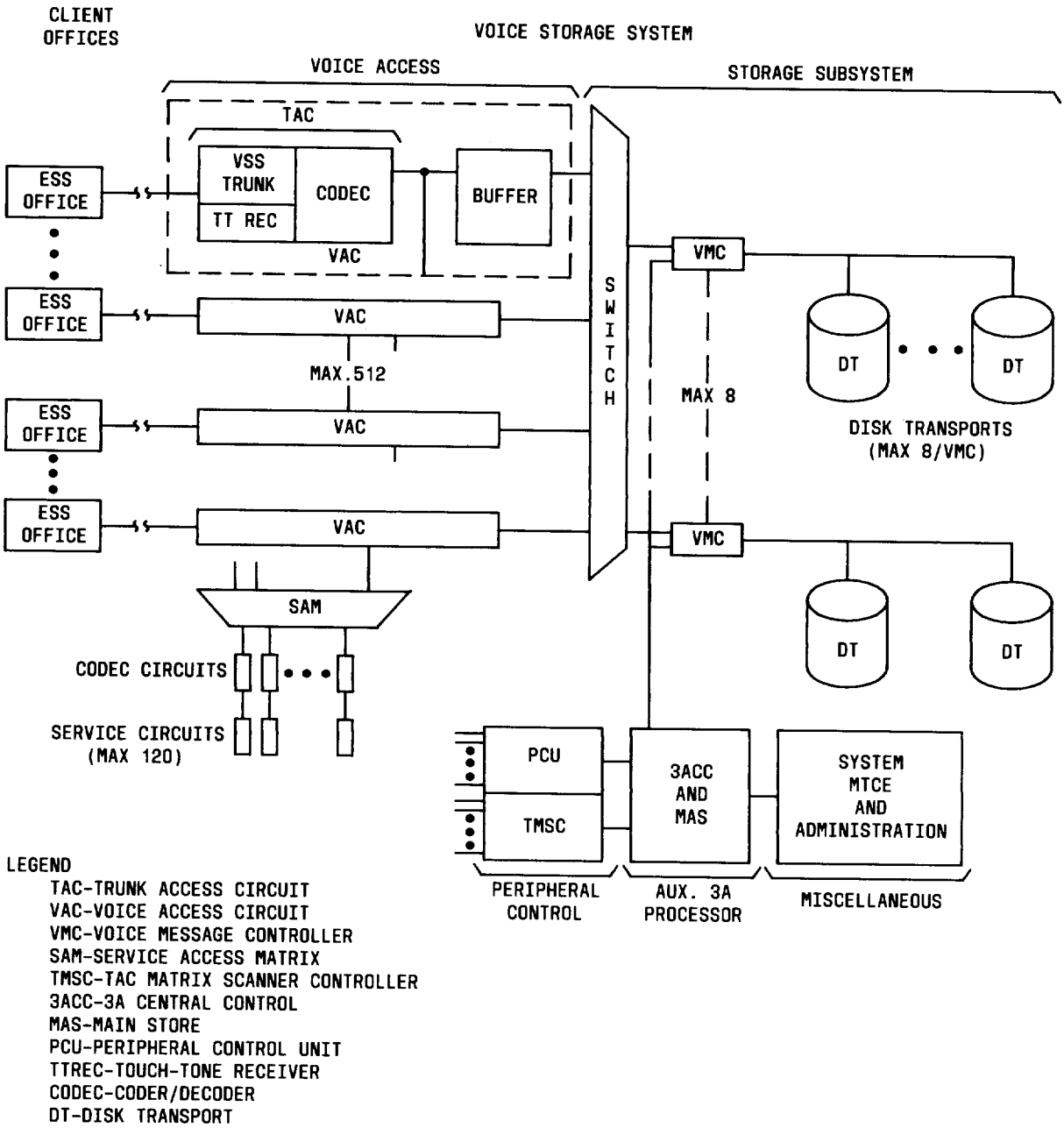

Fig. 1—1A Voice Storage System