SHARED ENHANCED PRIVATE SWITCHED COMMUNICATIONS SERVICE NETWORK FEATURE FEATURE DOCUMENT 1*ESS*™ SWITCH

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INTRODUCTION

1. GENERAL INFORMATION

SCOPE

1.01 This document contains descriptive information for the Shared EPSCS Network (SEN) arrangement. (The letter "E" in the SEN abbreviation and the EPSCS abbreviation signify Enhanced Private Switched Communications Service.) ***No attempt is made to define the appropriate intrastate or interstate tariff(s) under which current EPSCS networks and/or shared EPSCS networks are provided. Care must be taken when implementing either arrangement to ensure that the arrangement is consistent with the tariff(s) currently in effect.***

REASON FOR REISSUE

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

FEATURE AVAILABILITY

1.03 The SEN arrangement is available to any existing EPSCS customers being provided private switched telecommunications service via an EPSCS private network. It is compatible with the 1E6 and later programs associated with 1ESS switches. For detailed information applicable to the EPSCS feature and the associated feature groups and packages, see 231-190-127.

2. DEFINITION/BACKGROUND

DEFINITION

2.01 The ***Shared EPSCS Network (SEN)*** arrangement is a service-related capability that allows existing or future EPSCS customers to share selected network facilities associated with their private networks. These facilities include intermachine trunks (IMTs) and IMT terminations, plus off-network access lines (ONALs) and terminals. Prior to the introduction of SEN, these facilities were dedicated on a per customer basis. With SEN, the following also applies:

(a) The customer's PBX/CTX access lines (ALs) and special access terminations (SATs) if any, remain dedicated.

(b) Off-network access lines (ONALs) will be part of a SEN arrangement in a head-end hop-off (HEHO) configuration.

BACKGROUND

2.02 To aid in understanding the concepts of SEN, a brief overview of EPSCS with and without SEN is presented.

(a) ***Dedicated Facilities:*** In a non-SEN EPSCS network configuration, a customer's private network is configured to include a combination of dedicated facilities using shared 1ESS switches. The dedicated facilities may include:

(1) ALs and associated terminations,

(2) Off-network facilities and associated terminations, and

(3) IMTs and IMT terminations. Call traffic is carried to a designated EPSCS switch on dedicated ALs. This call traffic is then routed to a dedicated IMT, another AL, an ONAL, or an announcement.

(b) ***Shared Facilities:*** The sharing concept offered with SEN significantly reduces the average length of dedicated access lines which are generally the most expensive components of an EPSCS or SEN configuration. Call traffic can be carried to the nearest SEN switch on dedicated ALs; however, all IMT capacity and off-network capacity is provided to (shared by) all participating customers.

2.03 Generally, the concept of implementing SEN is to "rehome" existing EPSCS customer locations to the closest SEN switch. Overall, this results in cost reduction to the customer, based on shorter dedicated AL mileage. With SEN, all customers' call traffic, rather than one customer's call traffic, is combined at a given SEN switch to form more efficient IMT groups. Rehoming of EPSCS customers to the closest SEN switch occurs without the customer experiencing a "trunking penalty."

2.04 In general, SEN provides the same performance characteristics, operational objectives, and features that were previously provided with non-SEN EPSCS configurations. The significant features not available to customers are:

(a) Traffic usage information on shared facilities which includes peg, usage, and overflow counts, out of service, busy/idle status, identification of channels removed for maintenance, and identification of unused channels

(b) Control of alternate routing to or from switching centers affecting shared facilities

(c) Customer selection of the routing plan to be used on shared facilities

(d) Off-network routing control of shared facilities

(e) Economic route selection applied to shared routes

(f) Call queueing applied to shared routes

(g) Off-network amplifier arrangement applied to shared facilities

(h) Switching termination make-busy arrangement applied to shared facilities.

DESCRIPTION

3. USER PERSPECTIVE

CUSTOMER

A. SEN Architecture and Switching Hierarchy

3.01 A typical SEN consists of a set of electronic switches and interconnecting trunks operating under specified network design rules. The network switching machines are 1ESS switches with EPSCS features that are configured in a two-level switching hierarchy.

B. Access to SEN

3.02 To provide SEN for an existing EPSCS customer, dedicated ALs must be provided from each location to one SEN switch node. Access to a SEN switch is only via these dedicated ALs. Access to a SEN (from off-network) is allowed as with non-SEN EPSCS configurations, [i.e., via dedicated ONALs either through the network attendant or the Deluxe Network Access (DNA) feature].

C. Shared Call

3.03 A SEN IMT call involves the use of an originating switch and a different terminating switch. (An intraswitch call does not use SEN.) A SEN customer does not indicate (at time of dialing) that a call is a SEN call. Instead, the call is routed via SEN only if the applicable rate and route patterns (RRPATs) require it. A SEN call to an on-network location is normally a 7-digit number when dialed and a 10-digit number when outpulsed. Digit outpulsing is over a shared IMT. The 7- to 10-digit conversion occurs within a SEN switch by adding a 3-digit customer identification prefix code (0XX) in front of the 7-digit dialed number. This 3-digit addition is also commonly referred to as digit prefixing. A SEN call must exit from a terminating SEN switch via a dedicated AL connected to an on-network location. Calls to off-network numbers (i.e., 10-digit numbers) egress from an originating SEN switch only. A tail-end hop-off (TEHO) configuration is not used. Head-end hop-off (HEHO) must use shared ONALs for foreign exchange (FX), or wide area telephone system (WATS), or long distance dialing service.

D. SAT Feature

3.04 Although access to and exit from a SEN switch is allowed only from the customer's ALs or ONALs, provisions are available for customer's utilizing the SAT (EPSCS) feature. Any AL group with SAT incorporated may be used to connect a customer's non-EPSCS subnetwork to a SEN, provided the subnetwork is connected to SEN only at a single SEN switch.

E. Bypass ALs

3.05 A bypass AL can be used in non-SEN private network calls, but not in SEN calls.

F. Tandem Connections

3.06 A tandem connection of shared IMTs is permitted.

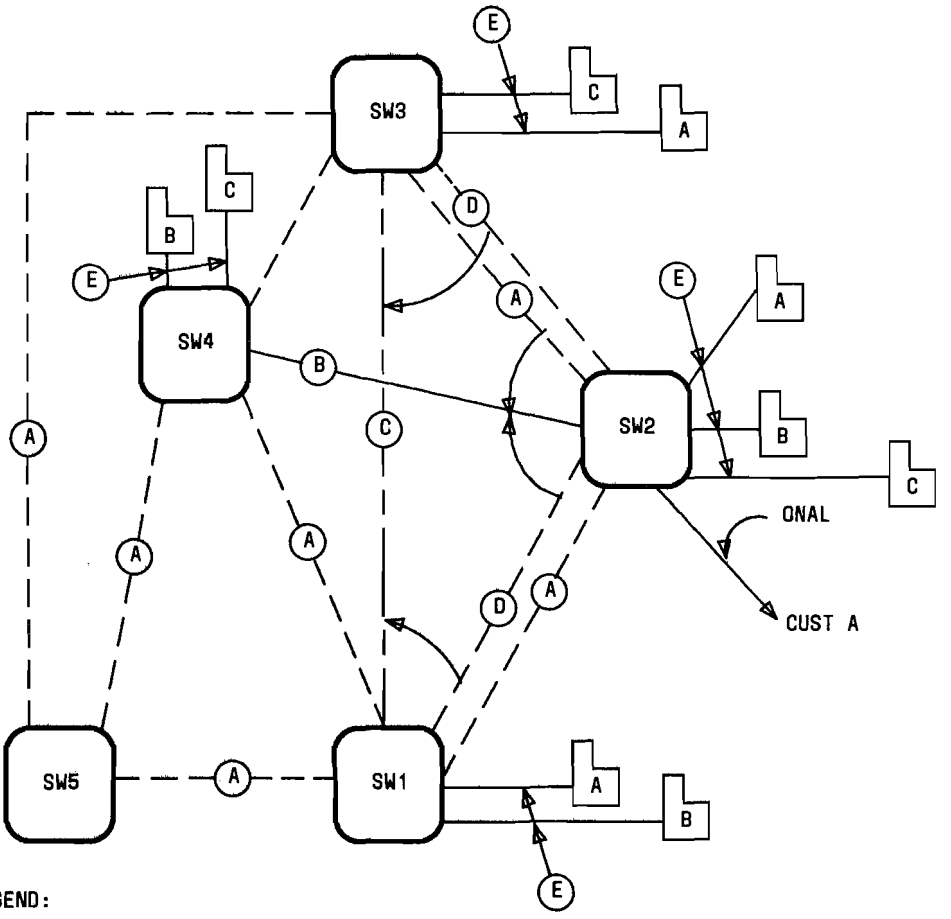
G. Network Hierarchy

3.07 An EPSCS customer's existing dedicated private network can coexist with a shared EPSCS network. The switching hierarchy in an existing EPSCS network is structured independently of the SEN switching hierarchy. (Refer to Fig. 1.)

3.08 Since these networks and their respective dedicated and shared trunk groups are engineered independently, no alternate routing is permitted from a dedicated to a shared IMT group and vice-versa. The normal alternate routing may take place on high usage (HU) and final trunk groups within each network.

H. Numbering Plan

3.09 In order for private network customers to use SEN, each individual private network must use a uniform numbering plan consistent with that of EPSCS. The same numbering plan will be used for addressing SEN calls and private network non-SEN calls. All on-network stations must be assigned a unique 7-digit number in the form of NNX-XXXX (where N must be an integer between 2 and 9 and X



LEGEND:

CUSTOMER [A] = DEDICATED FACILITIES.

CUSTOMER [B] & [C] = SEN FACILITIES.

(A) = HIGH USAGE SEN
(B) = FINAL SEN
(C) = FINAL CUST A
(D) = HIGH USAGE CUST A
(E) = DEDICATED ACCESS LINES
ONAL = OFF-NETWORK ACCESS LINE

Fig. 1—Typical EPSCS/SEN Switching Hierarchy

equal to an integer 0 through 9). To use SEN, each NNX is assigned a unique SEN switch for access. Assignment of the NNX is used by SEN to determine routing of calls to a given station.

I. Dialing Plan

3.10 The dialing procedure for use with SEN is basically the same as currently used in an existing non-SEN EPSCS network. Except for abbreviated dialing (described below), a SEN customer dials a 7-digit number to reach an on-network station and a 10-digit number to reach an off-network station.

J. DALs

3.11 The use of DALs in a SEN configuration is permitted. Whenever possible, all DALs for a private network customer (at a specific SEN switch) should be assigned to the same NNX and thousands group. For details, refer to 231-190-133.

4. SYSTEM OPERATION

HARDWARE

4.01 No new or unique hardware is required to implement the SEN feature. In first applications of SEN, existing EPSCS switches will be used. Where "rehoming" of existing EPSCS customers is required, each SEN customer is required to order dedicated ALs to "rehome" their locations to the closest SEN switch.

OFFICE DATA STRUCTURES

A. Translations

4.02 To convert an existing EPSCS switch to SEN capabilities, a unique 3-digit subtranslator and a call identification word (CIW) call type 26 must be added. (Refer to Fig. 2.) The 3-digit subtranslator is used to translate the customer identification prefix code (0XX) added to the 7-digit on-network number (NNX-XXXX). The CIW call type 26 is then used to delete the 0XX code before 3-digit translations are performed on the NNX. This translation method is used due to the 7-digit deletion limitation utilized within a 1ESS switch. Some PBXs interfacing with an EPSCS switch utilize only two digits when an on-network call is outpulsed.

4.03 In addition to the above, route index expansion table translations must be modified to allow a 3-digit customer identification prefix code (0XX) to be added to a 7-digit on-network number (NNX-XXXX). For detailed information, see reference (3) listed in Part 18.

B. Parameters/Call Store

4.04 Not applicable.

FEATURE OPERATION

4.05 The feature operation for SEN is basically identical to that presently provided by an EPSCS network. Although SEN allows sharing of network facilities, each SEN customer perceives that they have their own private network because of the method utilized in separation of each customer's traffic. This separation is best understood by an explanation of how a typical on-network call is processed. For explanation purposes, assume that an originating and terminating SEN switch is configured as shown in Fig. 3.

4.06 When a 7-digit on-network number (NNX-XXXX) is received at an originating SEN switch, 3-digit translation is performed against the NXX to obtain a RRPAT. The RRPAT is used to access a rate and route expansion table to obtain a route index (RI) and call type. The RI expansion table is then used to add a 3-digit customer identification prefix code (0XX) to the 7-digit on-network number (NNX-XXXX). Ten-digit outpulsing (0XX-NNX-XXXX format) is used between SEN switches.

4.07 When the 10-digit number (0XX-NNX-XXXX) is received at a terminating SEN switch, an entry is made into a 3-digit subtranslator using the 0XX as an index. Once an RRPAT is obtained, it is used as an index into a rate and route expansion table to obtain a CIW. This CIW contains TLDI information and call type 26. The call type 26 CIW deletes the 0XX and performs 3-digit translation on the NNX, utilizing the TLDI (toll digit interpreter) obtained from the CIW. When an RRPAT is obtained, an entry is made into another rate and route expansion table to obtain the RI and call type required for completing the call. The on-network call is then completed in the normal manner.

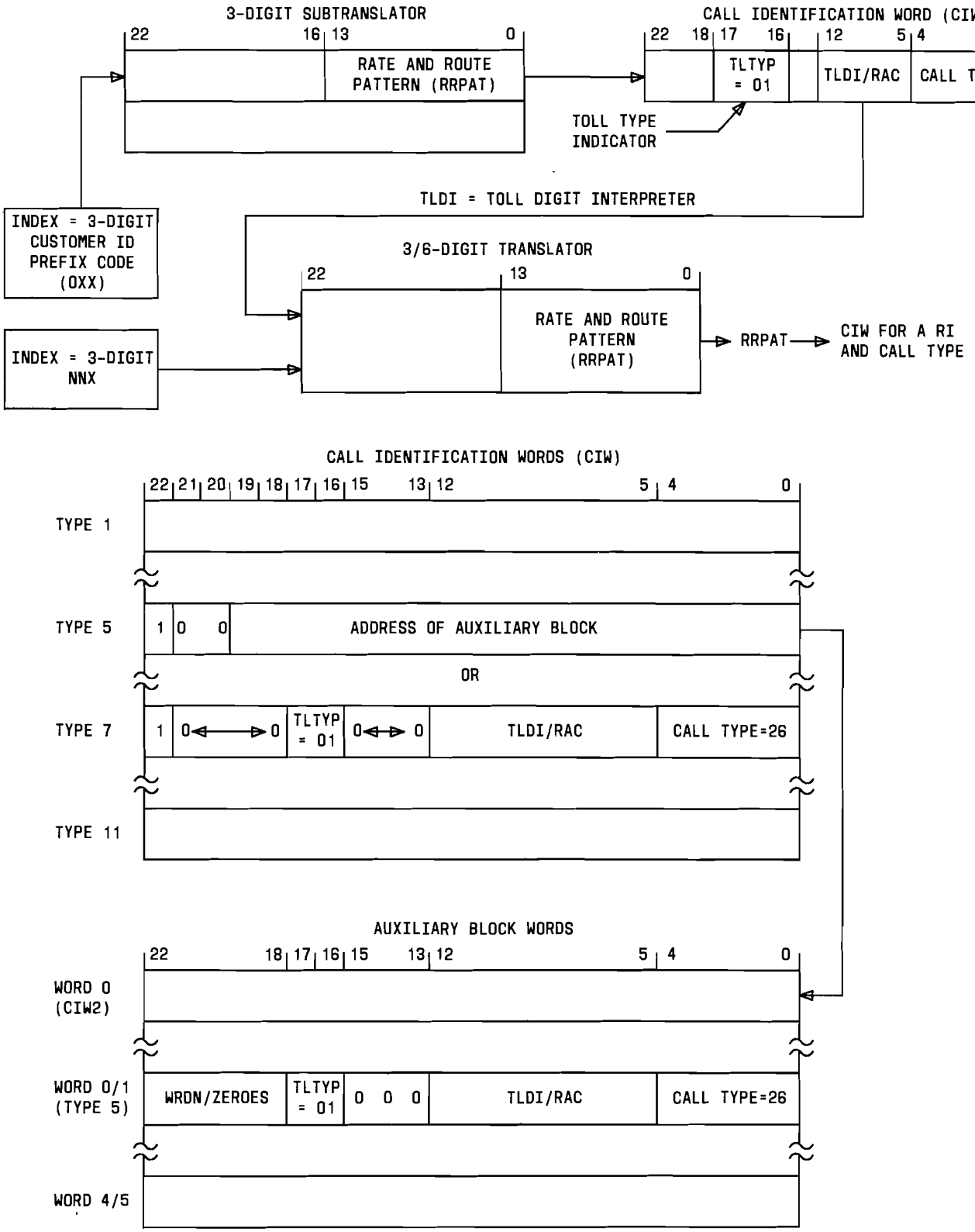
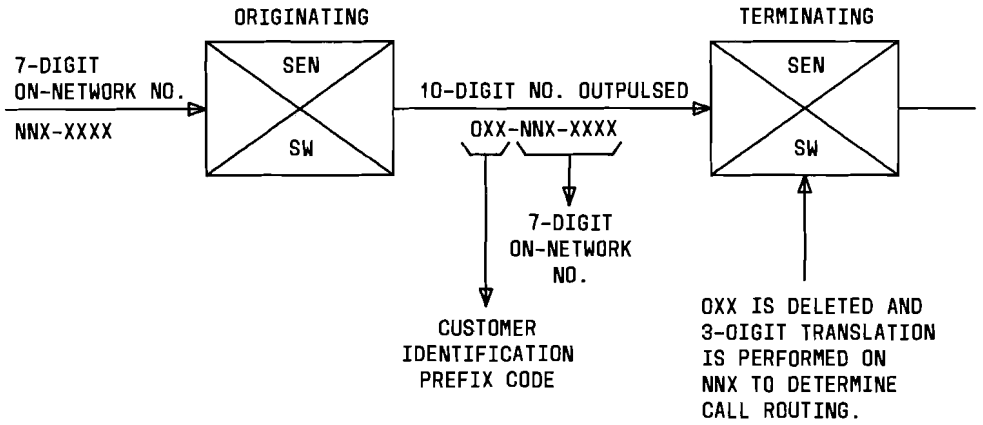


Fig. 2—Rate and Route Pattern Translation Data for SEN



NOTE:
1. The SEN switches shown are existing EPSCS switches that are converted to function within a SEN.

Fig. 3—Typical SEN Switch Arrangement

CHARACTERISTICS

5. FEATURE ASSIGNMENT

5.01 The SEN arrangement is assigned on a per customer basis.

6. LIMITATIONS

6.01 In all applications of SEN, existing 1E HILO equivalent 4-wire EPSCS switches are used as the network switching machine for both on-network and off-network calls. In this capacity, there are no limitations.

7. INTERACTIONS

7.01 Not applicable.

8. RESTRICTION CAPABILITY

8.01 Not applicable.

INCORPORATION INTO SYSTEM

9. INSTALLATION/ADDITION/DELETION

9.01 The procedures required to implement SEN are:

- Specifying the existing EPSCS switches to be used as SEN switches.
- Rehoming of existing EPSCS customer locations to the closest SEN switch.
- Modifying the translation data.
- Testing.

9.02 No new or updated set cards are required to convert existing EPSCS switches to SEN switches.

10. HARDWARE REQUIREMENTS

10.01 Not applicable.

11. SOFTWARE REQUIREMENTS

11.01 Refer to Part 4.

12. DATA ASSIGNMENTS AND RECORDS

TRANSLATION FORMS

12.01 The ***ESS 1303—Trunk and Service Circuit Route Index Record*** is the only translation form impacted by the SEN arrangement. The 3-digit customer identification prefix code (0XX) is identified on this form.

RECENT CHANGES

12.02 Refer to reference (4) in Part 18.

13. TESTING

13.01 Once SEN is implemented, on-network and off-network calls should be made to verify the SEN is functioning properly.

14. OTHER PLANNING TOPICS

14.01 Not applicable.

ADMINISTRATION

15. MEASUREMENTS

15.01 When SEN is implemented, there are no new or added traffic measurements. The traffic measurements used in existing EPSCS switches also apply to switches with SEN.

16. CHARGING

16.01 Charging for SEN and the usage thereof is dependent upon billing allocation arrangements negotiated with the customer's agent. Initially, an allocation method, potentially evolving to a fixed-rate, usage-sensitive plan, may be implemented.

16.02 With the billing allocation method, participants in the SEN will "lease" the channels, terminations, and off-network arrangements at rates set by existing tariffs. The total cost will be allocated to all SEN customers, based on their individual monthly usage of SEN facilities. These costs include: switching terminating charges under the EPSCS tariff, trunking charges based on the appropriate private line tariff, and any incremental costs incurred to provide and administer SEN.

16.03 The fixed-rate, usage-sensitive plan will bill each individual call based on call duration, distance, and time of day as agreed to by the customers.

SUPPLEMENTARY INFORMATION

17. GLOSSARY

17.01 Not applicable.

18. REFERENCES

18.01 The following practices are affected by or are applicable to the SEN feature.

(1) 231-190-127—Enhanced Private Switched Communications Service—Feature Document

(2) Translation Guide TG-1A

(3) Translation Output Configuration PA-591003

(4) 231-048-304—Recent Change Document for 3/6-Digit Translations.