SWITCHING SYSTEMS MANAGEMENT
NO. 2 ELECTRONIC SWITCHING SYSTEM
OPERATIONAL FEATURES
DYNAMIC SERVICE PROTECTION

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1. GENERAL

1.01 Dynamic service protection (DSP) is a feature designed to provide preferential service to certain lines during extended overloads on the switching system by preferentially giving dial tone access to those lines during overload conditions. DSP is a standard feature in the No. 2 Electronic Switching System (ESS) with either the LO-1 or EF-1 generic program. This section provides the network administrator with the procedures for implementing DSP and identifies the consequences of implementation.

1.02 This section is reissued to incorporate changes in the teletypewriter (TTY) messages associated with DSP. These messages are effective with LO-1, Issue 4.6, and EF-1, Issue 3.4. Further, this section clarifies the mode that DSP assumes following a stable clear initialization. The differences between the information pertaining to the above generic programs and earlier generics are indicated where applicable.

2. CONDITIONS FOR USE

2.01 It is not possible to prescribe exact conditions under which DSP should be applied. In general, the decision to use DSP should be based on those factors which affect the central office. When an overload occurs, the use of DSP is a matter of judgment for the network administrator. Variations in equipment arrangements may cause similar offices to respond differently to identical external influences.

2.02 In many cases, the condition will be a unique occurrence so that there is no previous experience to serve as a guide. Each situation will require the balanced consideration of such items as cause (if known), time of day, and relationship to busy period.

2.03 The objective is to use this feature only when essential lines must be guaranteed service. Once initiated, DSP cannot be affected by manual intervention.

2.04 DSP is a program-controlled function; however, the telephone company has the capability to either allow or deny the machine to initiate DSP. The proper mode is established by either of two TTY input messages covered in 3.04 of this section.

2.05 ***Due to the unique operational features of DSP, it is recommended that this***

feature be denied in attended or monitored offices.

3. SYSTEM IMPLEMENTATION

3.01 A customer line assigned as class A (essential) is given preferential treatment during line scanning and for connection to dial tone when DSP is activated by the system. DSP does not deny service to any line. It ensures class A customer lines preferential service while serving all other lines as rapidly as equipment becomes available. Class A lines may comprise one-eighth (4 out of 32 terminals in each concentrator) of the lines in an office and are assigned to special terminal equipment numbers (TENs) on the line trunk network (LTN); the only TENs which receive class A service are level 0 of even-numbered switches on all concentrators in a network. All lines not assigned as class A are considered to be class B.

3.02 Coin lines are normally included in essential groups to provide the general public with a means of obtaining communication service for urgent calls. However, all coin lines in a given area may not be included in essential groups if there is a large concentration of those telephones in that area; in this case, coin lines which are considered for assignment to essential groups may be selected for geographic dispersion. Important public locations where the stations are sheltered and accessible may also be included.

3.03 Unless DSP is denied, the system automatically administers DSP when an overload condition exists. An overload condition is determined by dial tone speed tests (DTSTs) which are performed every 4 seconds. Every 100 seconds the traffic program checks the DTST for the number of failures in the last 16 tests performed. A DTST failure results when a random customer line selected by the traffic program for the DTST has failed to receive dial tone within 3 seconds. There are three conditions which determine the actions taken by the system as a result of these tests.

(a) If the number of failures is less than seven, the DTST program will do one of two things. If DSP is not functioning at this time, the program does nothing. If DSP is functioning, the program will then stop DSP and set appropriate bits to print a DSP NORMAL message on the network administration (traffic) and maintenance TTYs. The program will also extinguish the DSP lamp (amber) on the maintenance center control and display panel and a spurt minor alarm will be given.

(b) If the number of failures is seven, eight, or nine, the program will not change the status of DSP. If DSP is functioning, it continues; if it is not functioning, the program does not turn it on.

(c) If the number of failures is greater than nine, the program will attempt to activate DSP. If DSP is already operative no further action is taken. If DSP is not functioning a check is made to determine if DSP has been allowed. If it is denied, a DSP DENIED message is printed on the maintenance and network administration TTYs and the major alarm is activated. If DSP is allowed and not previously active, the program will activate DSP, light the DSP lamp (amber) on the maintenance panel, activate the major alarm, and output a DSP ACTIVE message on the maintenance and network administration TTYs.

3.04 The DSP check is made continuously 24 hours per day and cannot be turned off. However, the telephone company has the capability to either allow or deny the system to activate DSP. Normally DSP is denied by manually inputting the following TTY message on either the network administration or the maintenance center TTY.

(1) T SY:DSP:DNY![1] This message will deny the activation of DSP even though the system determines that DSP is needed. The system should respond OK or NG. If the response is NG, repeat the input message, making sure that it is correctly typed.

If DSP has been denied, the following TTY input message must be typed on either the network administration or the maintenance center TTY to permit the system to activate DSP.

(2) T SY:DSP:ALW![1] This message will allow the system to activate DSP as defined in 3.03. The system should respond with OK or NG. If the response is NG, repeat the input message, making sure that it is correctly typed.

Note: These messages by themselves will not initiate or deactivate DSP; they merely establish the mode of DSP (allow or deny)

which in turn sets the system response to a possible overload condition.

3.05 Following any stable clear initialization, DTST failures are set to zero. The status of DSP is dependent upon the generic program in use. ***For offices with programs preceding LO-1, Issue 4.6, and EF-1, Issue 3.4, DSP is automatically allowed. For offices with LO-1, Issue 4.6, and EF-1, Issue 3.4, DSP is automatically denied. If the alternate mode is desired, a TTY input message is required (see 3.04).***

3.06 When DSP is active, the following actions are taken.

(1) Class A lines (see 3.01) are scanned continuously while class B lines are looked at only during alternate 25-millisecond periods.

(2) If lines are blocked from selecting a customer digit receiver (CDR), no class B lines will be allowed to select a receiver until at least one class A line has succeeded.

3.07 The system has three output messages which indicate the status of DSP. All three of these messages will be printed out on the maintenance TTY and the network administration TTY. An explanation of each message follows.

(1) TA SY DSP ACTIVE[1] This message is printed when DSP has been initiated by the system. It will be accompanied by a lighted lamp (designated DSP) located on the maintenance center control and display panel and a major alarm. This condition is also noted in each of the traffic output messages (schedules) as long as DSP is active.

(2) TA SY DSP NORMAL[1] This message is printed after DSP has been in effect and the system has turned it off. The DSP lamp (amber) at the maintenance center control and display panel will be extinguished and a spurt minor alarm will be given.

(3) TA SY DSP DENIED[1] This message is printed when an overload condition exists, but the telephone company has denied DSP in accordance with 3.04. This message will be printed every 100 seconds until DSP is allowed or the overload condition subsides. A major alarm will be given at each printout.

3.08 Once DSP has been initiated, it cannot be stopped until the overload subsides. If an overload condition exists and the deny message is in effect, it will be necessary to type in the allow message before the system can initiate DSP.

4. FLOW DIAGRAM

4.01 Figure 1 is a flow diagram which gives a graphical representation of DSP.

5. RECORDS AND REPORTS

5.01 The required reports on the use of DSP should be entered on the proper forms and referred to other departments in accordance with local instructions. These reports should include such information as date time, reason, and duration.

5.02 Class A terminal assignments are recorded on the Terminal Equipment Number Record—Form 2171-R.

6. REFERENCES

6.01 The following sources provide additional information concerning DSP.

(a) Bell System Practices Section 232-122-301, Dynamic Service Protection

(b) Feature Document 232-190-113, Dynamic Service Protection

(c) TG-2H, Division 10, Traffic Measurements

[1]For generic programs preceding LO-1, Issue 4.6, and EF-1, Issue 3.4, those input messages either allowing or denying DSP are entered on the maintenance center TTY only. Also, the first field notations of input and output messages are M and MA, respectively. ***In all cases, consult the Input Message Manual, IM-2H200, and Output Message Manual, OM-2H200, for message formats; the use of the IM-2H200 and OM-2H200 for the appropriate generic program should be observed.***

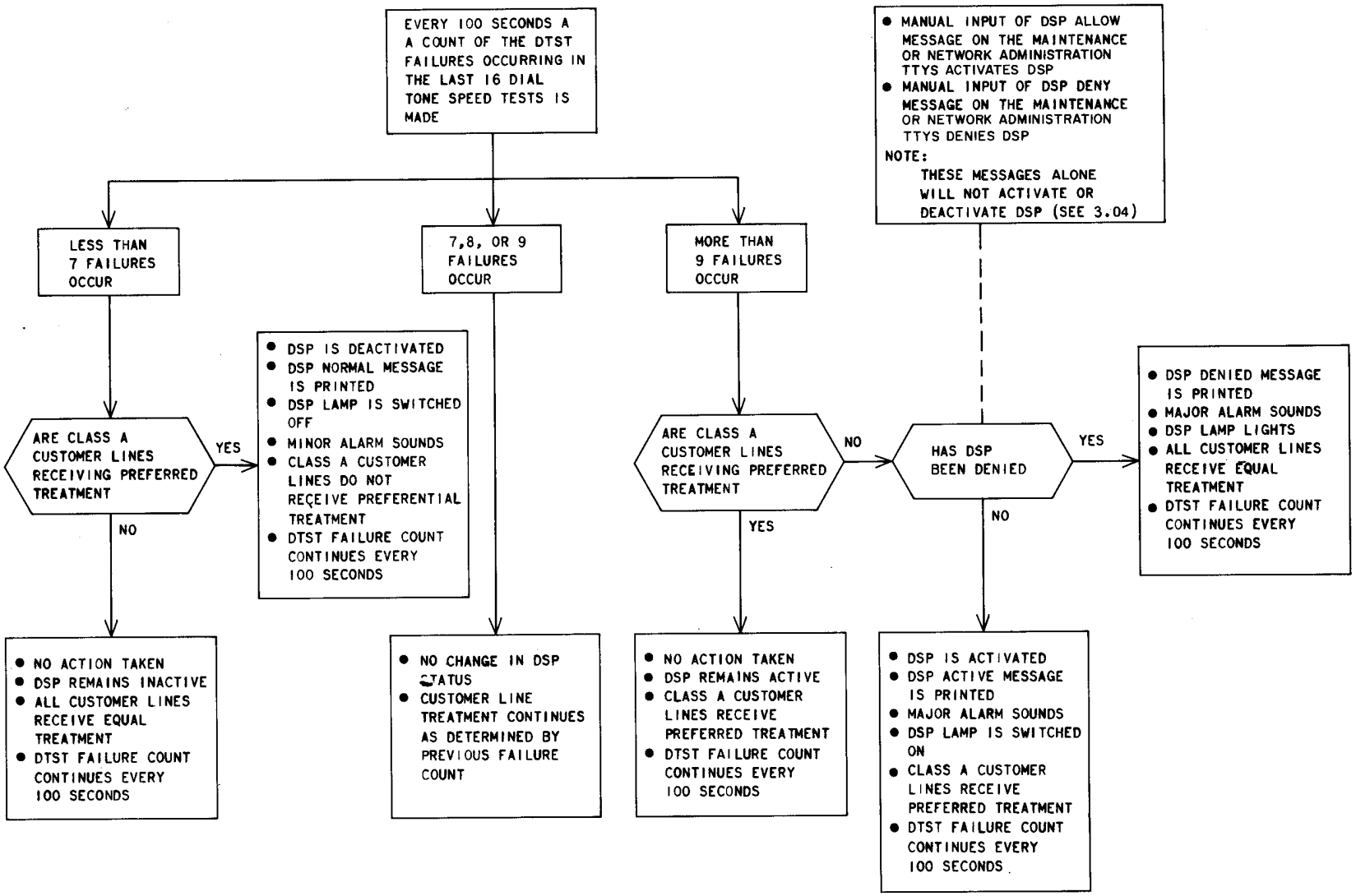

Fig. 1—Dynamic Service Protection Feature Flow Diagram—No. 2 ESS