Advanced Communications Function for Network Control Program for the IBM 3725; Emulation Program for the IBM 3725

Program Product

Reference Summary and Data Areas

Program Numbers 5735-XX9
5735-XXB

Version 2

LY30-3070-1
File No. S370/4300-30

IBM Corporation, Information Development, P.O. Box 12195,
Research Triangle Park, North Carolina 27709

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Second Edition (November 1984)

This major revision obsoletes LY30-3070-0. See the Summary of Changes page for brief descriptions of changes made by this edition. A change to the text or to an illustration is indicated by a vertical line to the left of the change.

This edition applies to Version 2 of Advanced Communications Function for Network Control Program for the IBM 3725, Program Product 5735-XX9, and to Emulation Program for the IBM 3725, Program Product 5735-XXB. This edition also applies to all subsequent releases and modifications until otherwise indicated in new editions or Technical Newsletters. Changes are made periodically to the information herein; before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370 and 4300 Processors Bibliography*, GC20-0001, for the editions that are applicable and current.

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Preface

This program reference summary provides the system programmer and IBM program support representative with reference information about the Advanced Communications Function for Network Control Program (ACF/NCP), Emulation Program for the IBM 3725 (EP/3725), and Partitioned Emulation Programming (PEP) Extension. It provides quick access to often-used diagnostic and debug information. For a more comprehensive description of a subject, refer to the publications listed under "Related Publications."

Handbooks containing previous levels of NCP are still valid for those programs. This manual contains information for Advanced Communications Function only.

This handbook consists of 21 sections containing reference information.

Note: The X.21 switched line interface is supported for World Trade countries only.

Related Publications

Advanced Communications
Function for
Network Control Program
for the IBM 3725
Diagnosis Reference, LY30-3071

Emulation Program
for the IBM 3725
Logic, LY30-3055

Advanced Communications
Function for
Network Control Program and
System Support Programs
for the IBM 3725;
Installation and Resource Definition
Guide, SC30-3178

Advanced Communications
Function for
Network Control Program
for the IBM 3725;
Customization, LY30-3072

Advanced Communications
Function for
Network Control Program and
System Support Programs
for the IBM 3725;
Diagnosis Guide, SC30-3181

X.25 Program Description and
Operations Manual, SC19-5111

Related Publications

IBM 3725 Communication
Controller Principles of
Operation, GA33-0013

Network Control Program:
Structure Overview for
Start-Stop and
BSC Line Controls, SC30-3113

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Contents

Figures

Summary of Changes
LY30-3070-1

This major revision adds information from suggestions, reader's comments, authorized program analysis reports (APARs) and minor technical changes.

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Section 1. Data Area Relationships

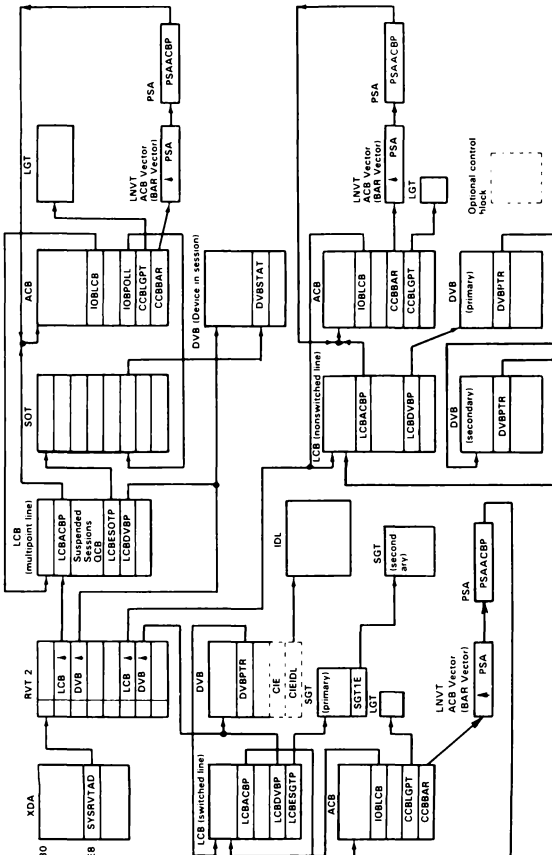


Figure 1. NCP Control Block Relationships for BSC/SS Lines

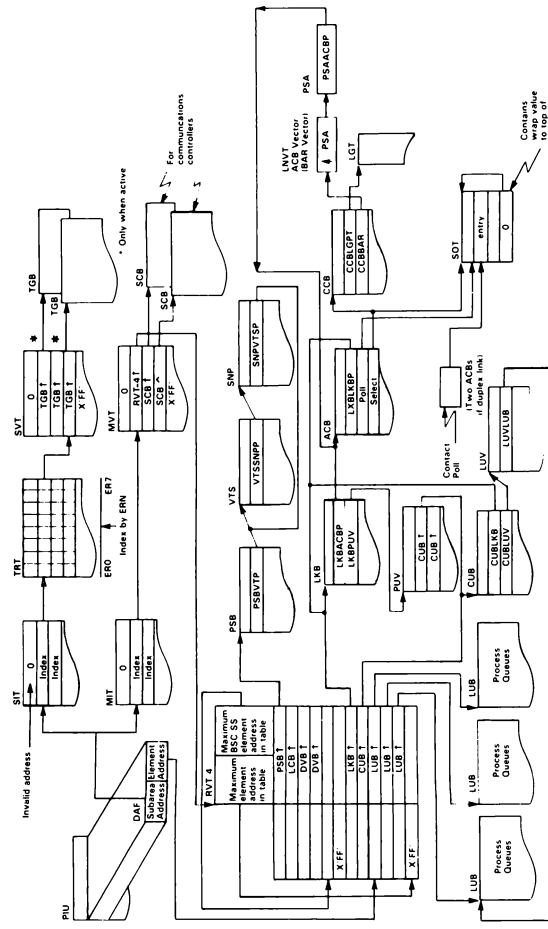


Figure 2. NCP Control Block Relationships for SDLC Links

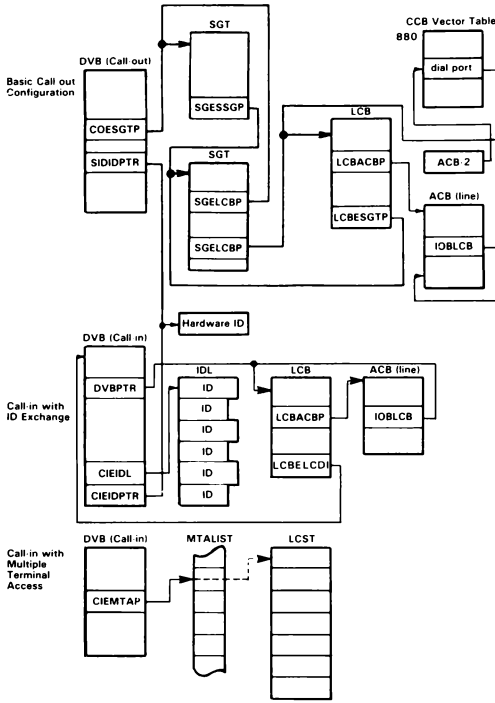


Figure 3. NCP Control Block Relationships for Switched BSC/SS Lines.

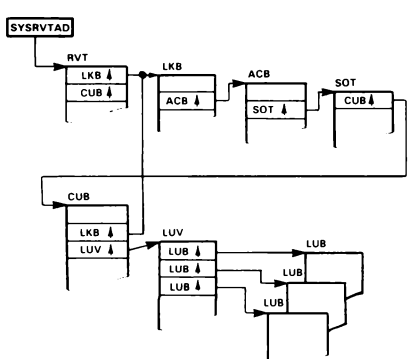


Figure 4. Overview of NCP Control Block Relationships for SDLC Links

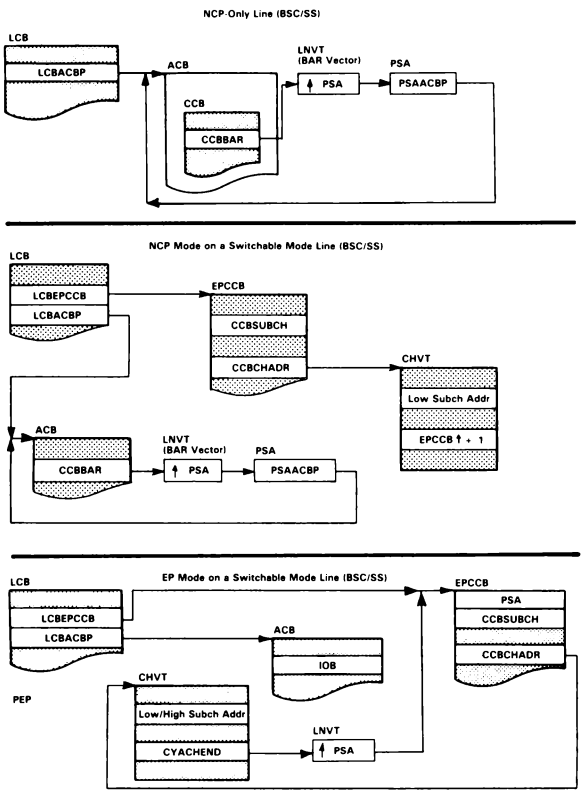


Figure 5. NCP Pointers to the CCB (Part 1 of 2)

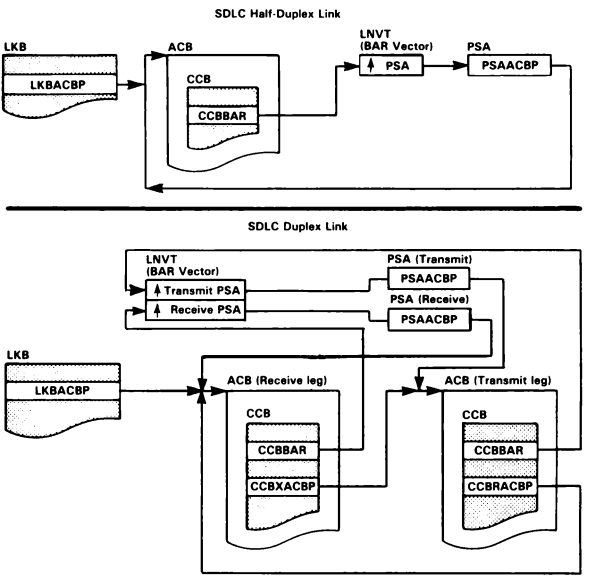


Figure 5. NCP Pointers to the CCB (Part 2 of 2)

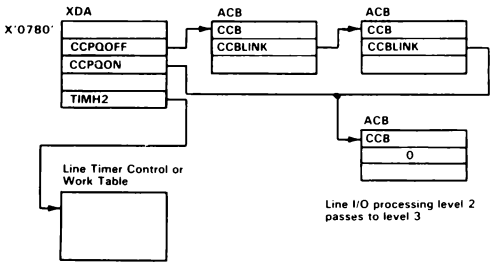


Figure 6. NCP Word Direct Addressable Pointers

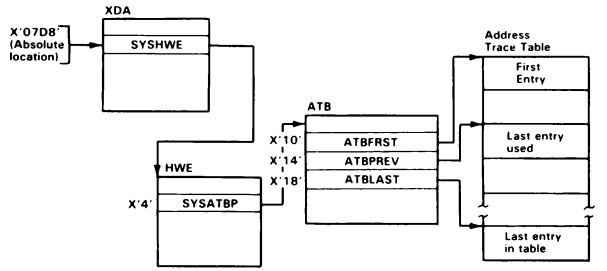


Figure 7. Locating the NCP Address Trace Table

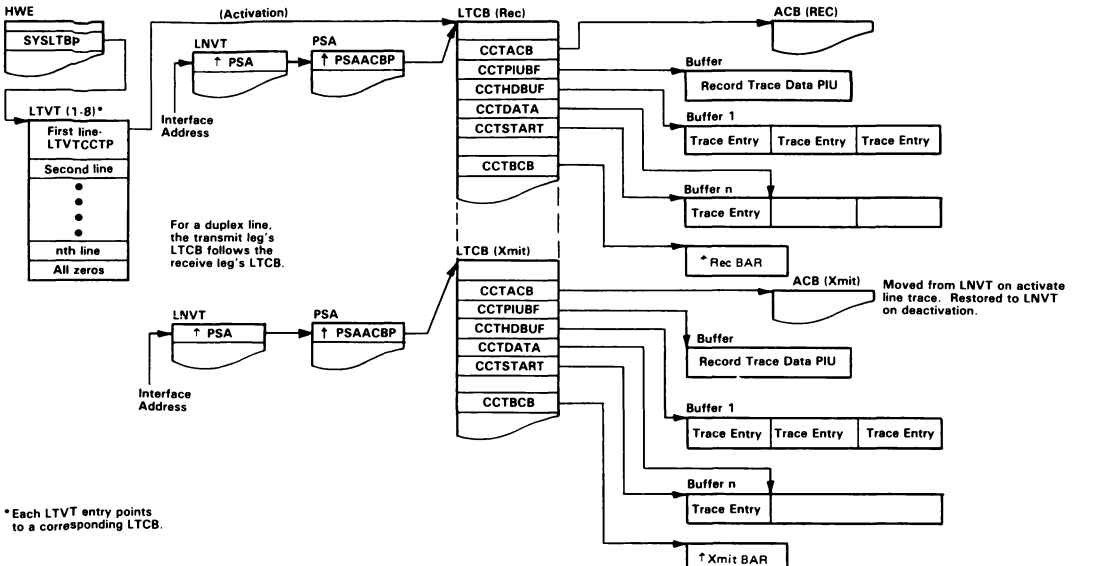


Figure 8. Control Block Relationships for NCP Line Trace

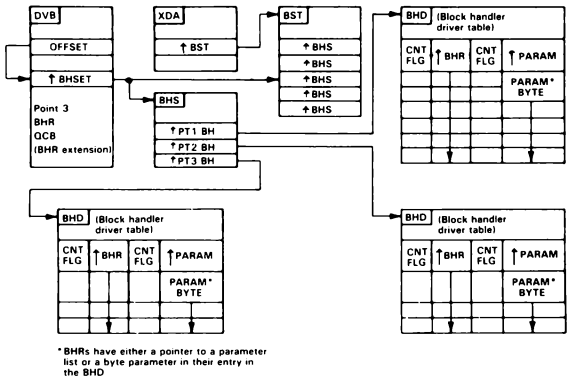


Figure 9. NCP Control Block Relationships for BHRs

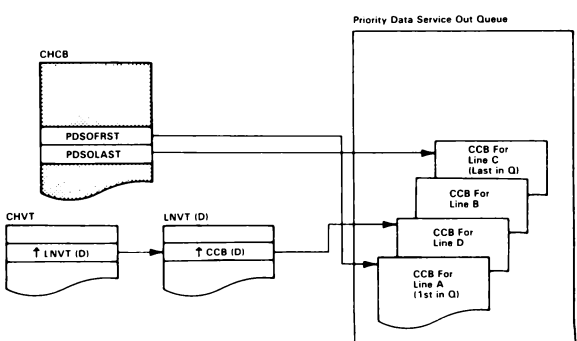
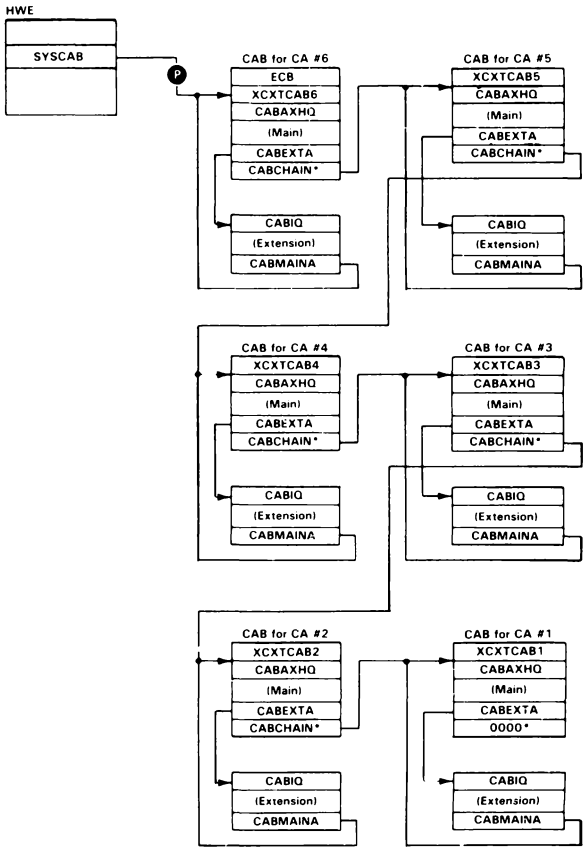


Figure 10. EP/PEP Control Block Relationships

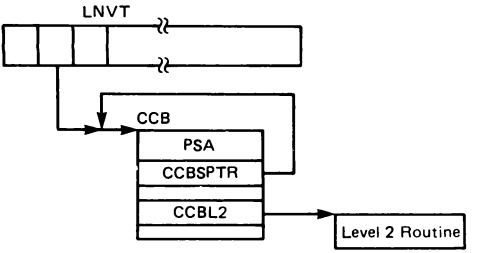
This example shows six CAs generated active.



*Last CAB in the chain has zeros in CABCHAIN field.

P = CHSVH2 pointer to the highest numbered CA generated. This CA is always initialized first. The other CAs are initialized in descending CA number order

Figure 11. NCP Channel Control Block Chaining Relationships



Normal EP Control Block Structure

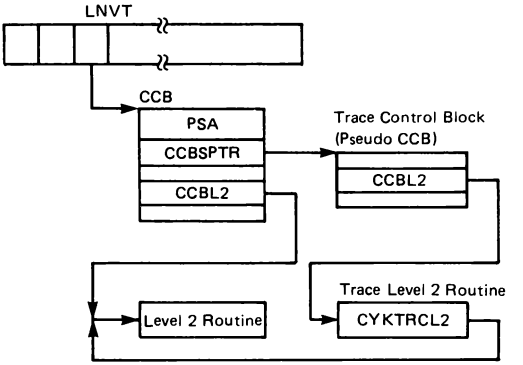


Figure 12. EP Control Block Structure When Tracing Level 2.

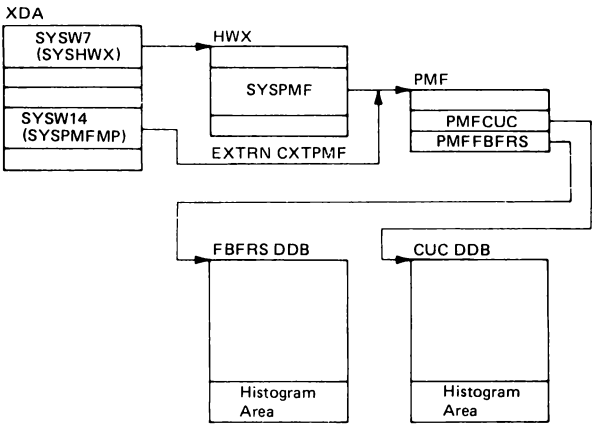
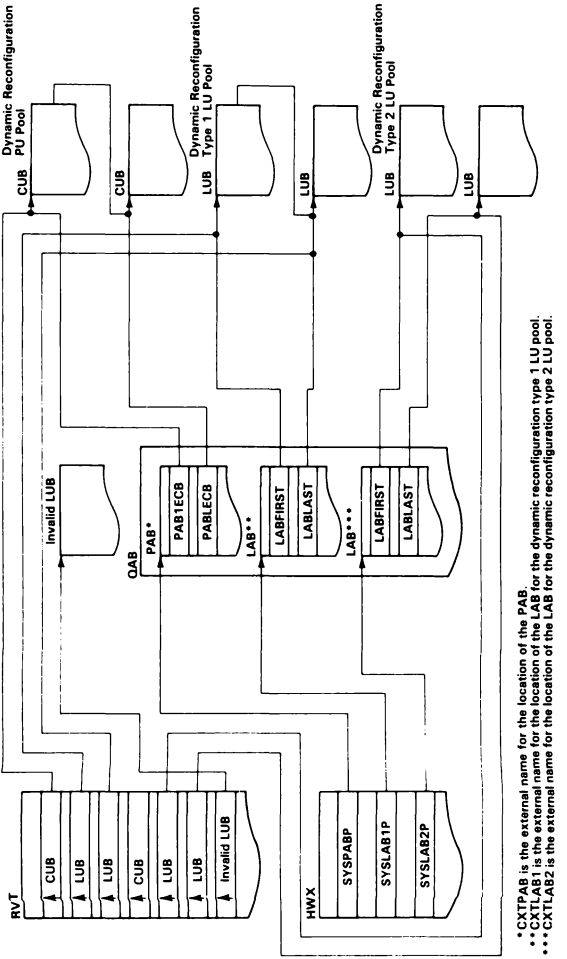


Figure 13. PMF Control Block Relationships



*CXTPAB is the external name for the location of the PAB.
**CXTLAB1 is the external name for the location of the LAB for the dynamic reconfiguration type 1 LU pool.
***CXTLAB2 is the external name for the location of the LAB for the dynamic reconfiguration type 2 LU pool.

Figure 14. Dynamic Reconfiguration Control Block Relationships

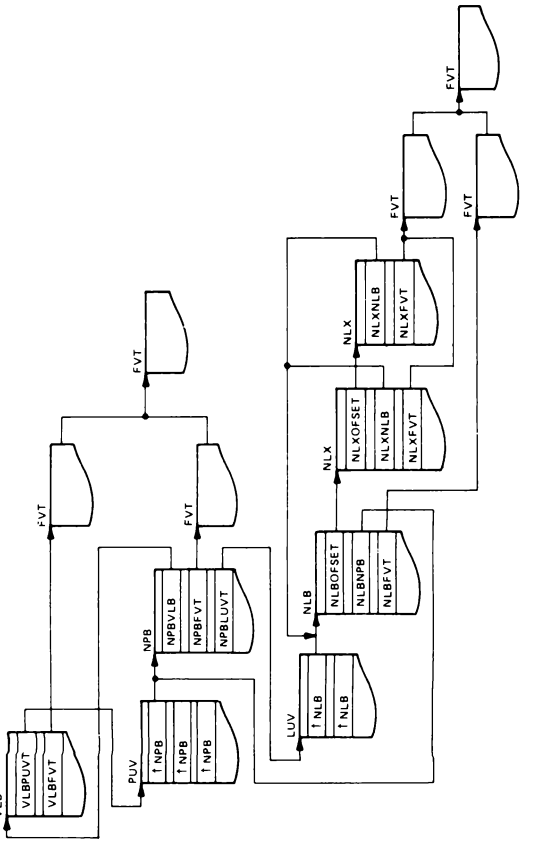


Figure 15. Programmed Resources Control Block Relationships

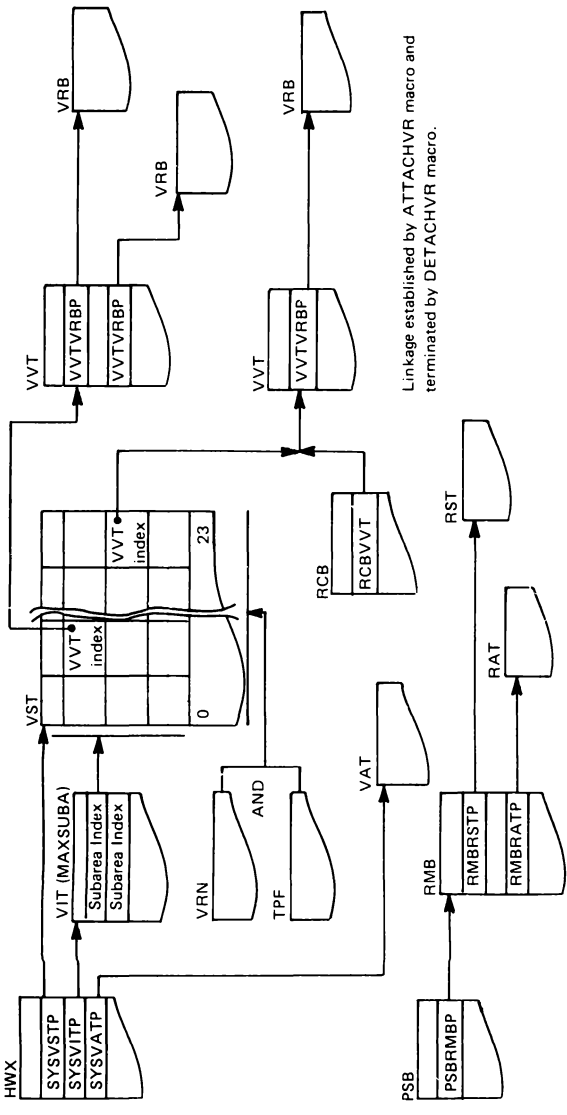


Figure 16. Routing Control Block Relationships

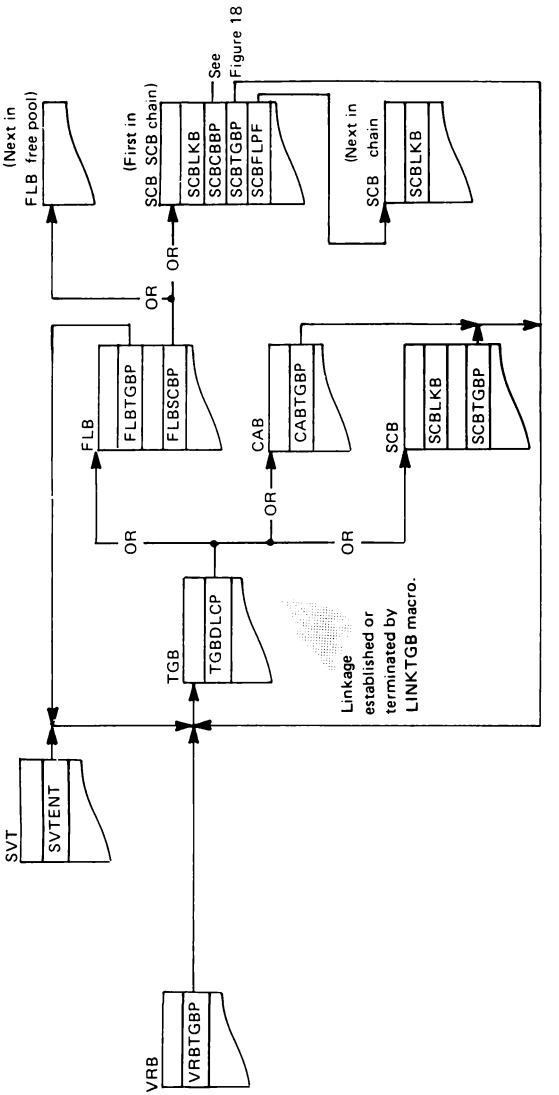


Figure 17. Transmission Group Control Block Relationships

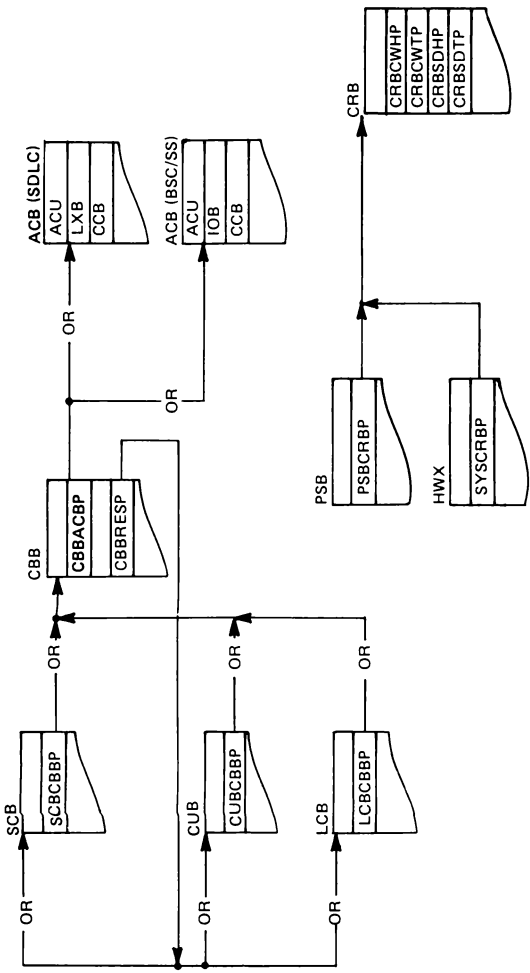


Figure 18. Committed Buffer Control Block Relationships

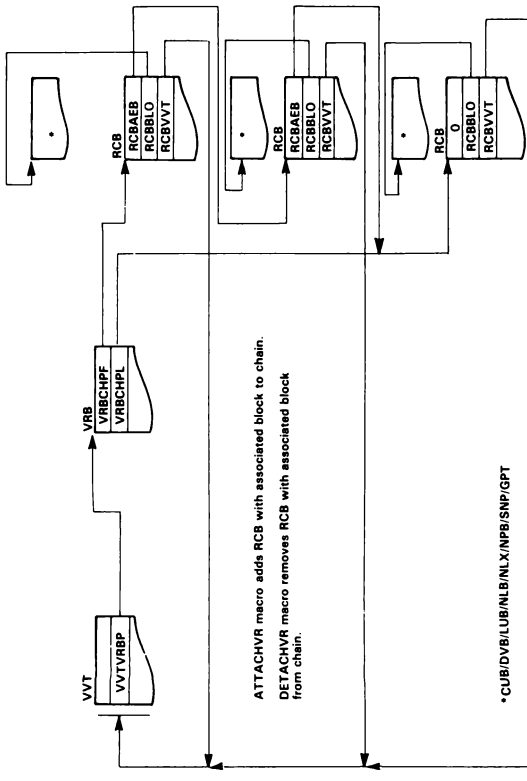


Figure 19. VR Session Relationships

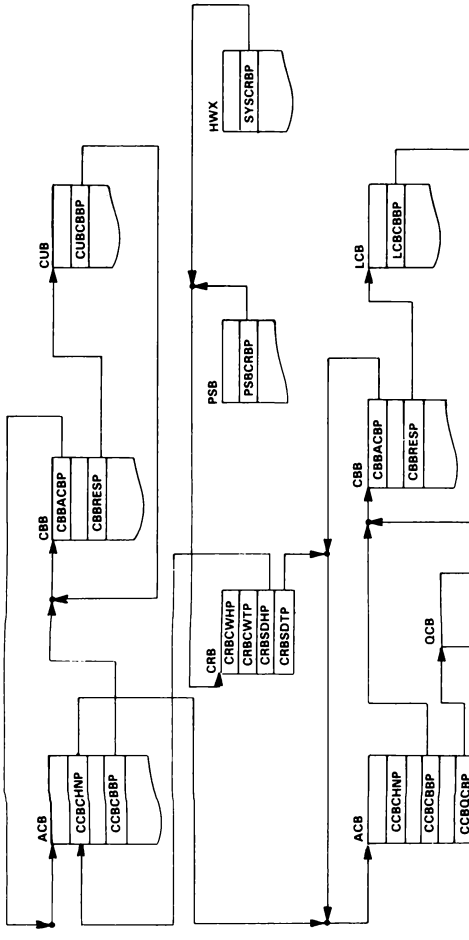


Figure 20. Committed Buffer Control Block Relationships

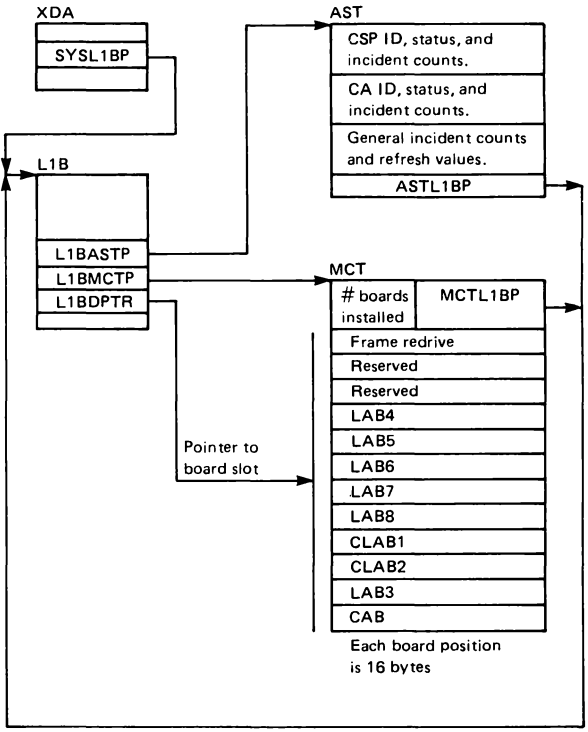


Figure 21. Level 1 Control Block Relationships

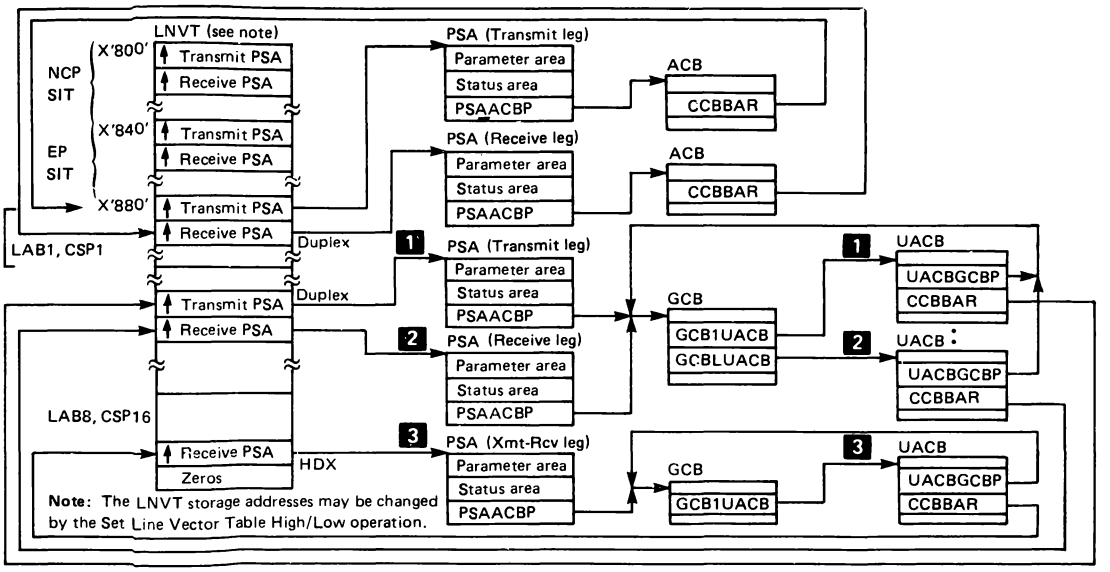


Figure 22. CSP Control Block Relationships for NCP

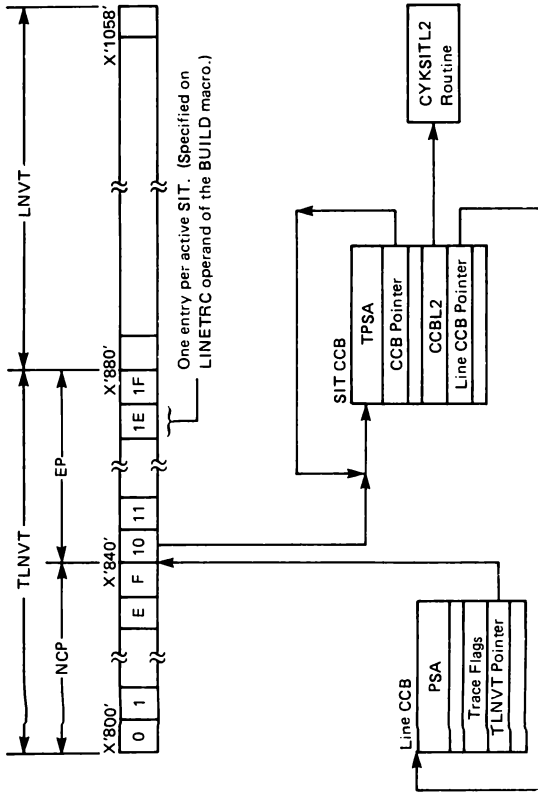


Figure 23. SIT Control Block Structure for EP

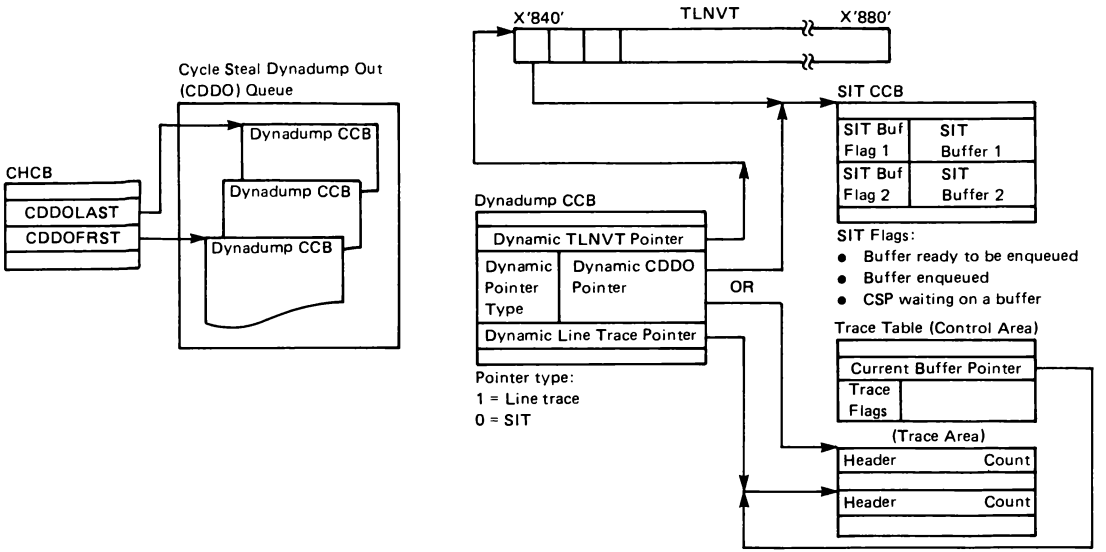


Figure 24. Control Block Relationship—Buffer Search for Dynamic Dump Request (EP)

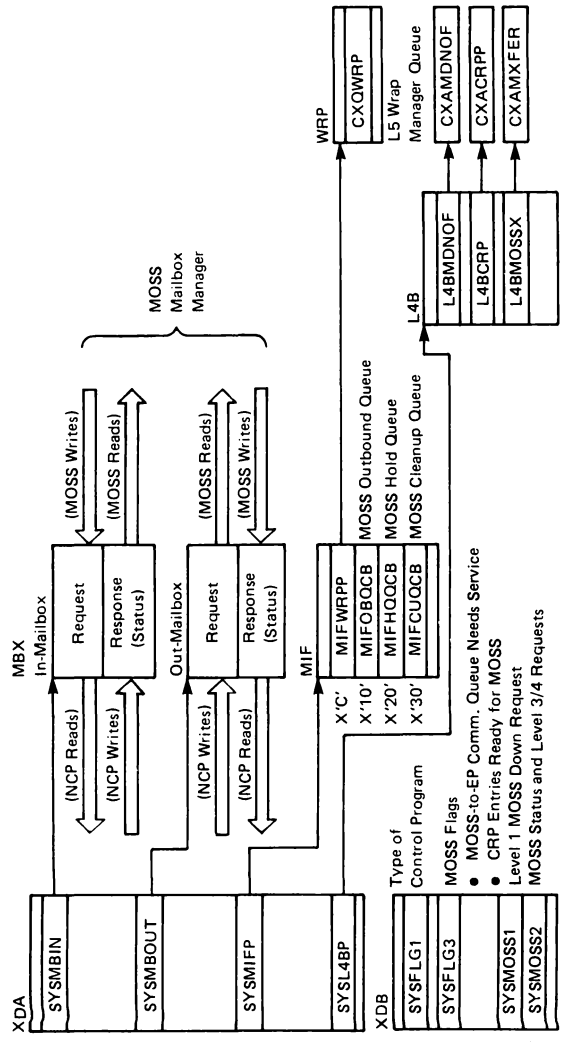


Figure 25. Maintenance and Operator Subsystem (MOSS) Control Block Relationships

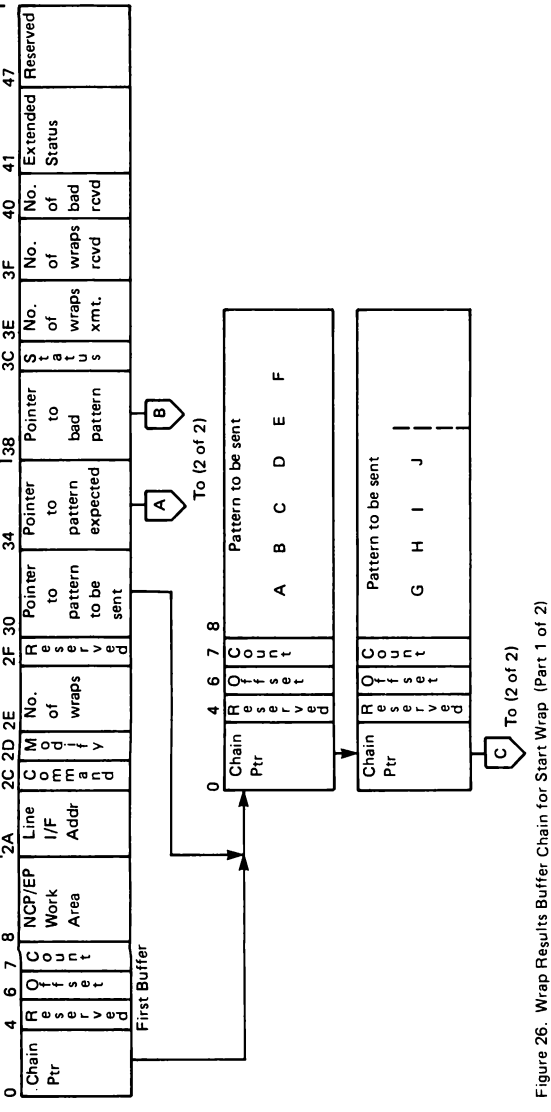


Figure 26. Wrap Results Buffer Chain for Start Wrap (Part 1 of 2)

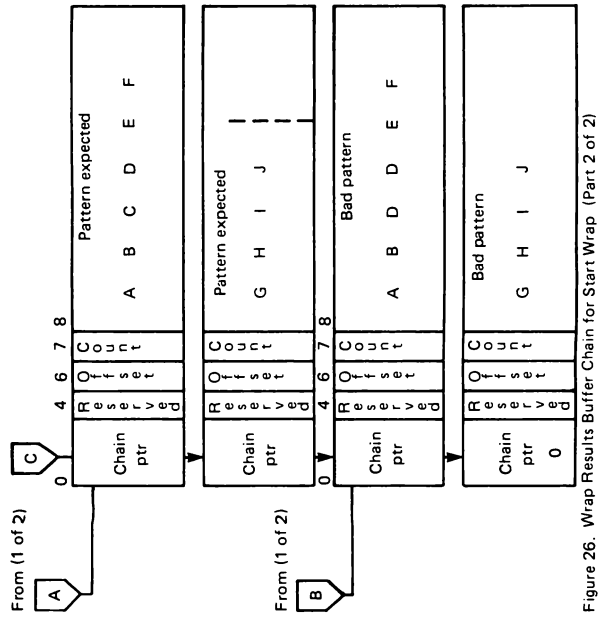
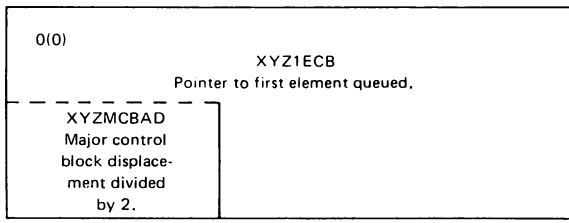


Figure 26. Wrap Results Buffer Chain for Start Wrap (Part 2 of 2)

Section 2. Data Area Layouts

The following conventions are used in this section:

- The displacement of each field from the beginning is given in both decimal and hexadecimal notation (hexadecimal in parentheses). The displacements in the direct addressable areas (XDA, XDB, and XDH) are given in absolute, hexadecimal notation since these are always in a fixed location of storage.
- If a single field has dual uses with different labels according to the use, the displacement is listed only once, and a broken line is inserted between the different labels.
- Shifted addresses are no longer used.
- Pointers or addresses contained in fields with a defined length of 4 bytes occupy the last 24 bits of the fields. Only the last 22 bits are significant. Often byte 0 of the fields is used for other purposes, such as for flags. In cases such as these, the 4 byte field is shown as follows:



- Labels shown in parentheses are equated in NCP and EP code to the defined label for a field. Equated labels are most frequently used in the direct addressable areas.
- One field in every queue control block (QCB) is labeled "major control block displacement." This field contains the offset in halfwords to the beginning of this QCB from the beginning of the control block that contains the QCB. For example, the DVIMCBD field contains the displacement from the beginning of the device base control block (DVB) to the beginning of the device input QCB.

- Bit patterns or hex values within a field are defined in a byte expansion table following the formatted data area. The bytes within a field are numbered from zero origin. For example, if the first byte in a 2-byte field has a unique definition, it is referred to as byte 0.
- Bits in the byte expansions that are not identified are reserved.
- Bits within a byte are numbered 0 through 7.

ACHAIN ANCHOR BLOCK AAB

Program: NCP

Size in bytes: 8(8)

Created by: NCP generation

Pointer to: Variable

Function: Contains two pointers, one to first of chain and one to last of chain.

0(0)	AABCHNPF First achain element pointer
4(4)	AABCHNPL Last achain element pointer

ABEND CONTROL BLOCK — ABN

Program: NCP, EP, PEP

Size in bytes: 144(90) for ABN plus 36(24) for ABNX; total = 180(B4).

Created by: NCP or EP generation.

Pointer to: SYSABNP field in HWE.

Function: Contains save areas for level 1 through level 5 registers at abend.

0(0)	ABNTEMP Temporary save area for abend register 2.
4(4)	ABNABNXP Pointer to the ABN extension (ABNX) which directly follows ABN.
8(8)–15(F)	Reserved
16(10)–47(2F)	ABNL1IAR Eight fullword save areas for level 1 registers (IAR through 7).
48(30)–79(4F)	ABNL2IAR Eight fullword save areas for level 2 registers (IAR through 7).
80(50)–111(6F)	ABNL3IAR Eight fullword save areas for level 3 registers (IAR through 7).
112(70)–143(8F)	ABNL4IAR Eight fullword save areas for level 4 registers (IAR through 7).

Abend Control Block Extension (ABNX)

144(90)–175(AF)	ABNBGIAR Eight fullword save areas for level 5 registers (IAR through 7).
176(B0)	ABNABNP Pointer back to the ABN.

ADAPTER CONTROL BLOCK

ACB (BSC/SS)

Program: NCP

Size in bytes: 128(80) plus prefix.

Created by: NCP generation.

Pointer to ACB: LCBACBP field in LCB, PSAACBP field in the PSA, or ACB vector.

Function: Contains line control information and the status of I/O operations for BSC/SS lines.

-12(-C)	Auto-call unit prefix (ACU)
0(0)	Input/output block (IOB)
36(24)	Character control block (CCB)

ADAPTER CONTROL BLOCK

ACB
(SDLC)

Program: NCP

Size in bytes: 128(80) plus prefix.

Created by: NCP generation.

Pointer to ACB: LKBACBP field in LKB or PSAACBP field in the PSA. If it is a duplex link, CCBRACBP in the transmit leg's ACB points to the receive leg's ACB, and CCBXACBP in the receive leg's ACB points to the transmit leg's ACB.

Function: Contains line control information and the status of I/O operations for SDLC links.

-12(-C)	Auto-call unit prefix (ACU)
0(0)	Link XIO control block (LXB)
36(24)	Character control block (CCB)

Program: NCP

Size in bytes: 12(C)

Created by: NCP generation

Pointer to: Determined by subtracting 12(C) from the address of the LXB (SDLC) or IOB (BSC/SS).

Function: Contains the auto-call retry parameters.

0(0) ACURTC Timer retry count	1(1) ACURTL1 1st level retry timer limit	2(2) ACURC2 2nd level retry count	3(3) ACURCL2 2nd level retry count limit
4(4) ACURTL2 2nd level retry timer limit	5(5) ACURCL1 1st level retry count limit	6(6) ACUBAR Auto-call unit interface address	
8(8) ACUR1 Scanner command and line address.		10(A) ACUR2 Scanner address and E Bit.	

ACHAIN ELEMENT BLOCK — AEB

Program: NCP

Size in bytes: 4(4)

Created by: NCP generation

Pointer to: Variable

Function: Contains a pointer for chaining.

0(0)
AEBCHNP Next AEB pointer

ADAPTER STATUS TABLE AST

Program: NCP, EP, PEP

Size in bytes: 84(54)

Created by: NCP, EP, or PEP generation. The shared-code module CXASCB calls the generating macro CXTAST.

Pointer to AST: L1BASTP field in L1B.

Function: Contains identification, status, and level 1 incident counts for all communications scanner processors (CSP) and channel adapters (CA) in the communications controller as well as level 1 incident counts for adapter input/output (AIO), programmed input/output (PIO), and adapter unresolved errors.

Notes:
1. To address the byte for an individual CSP in the identifier—, status—, or incident count groups, (1) get the base address, (2) add the CSP address (0 through F) to the base register, and (3) use the label at the beginning of the group as the displacement.
2. The byte for an individual CA identifier, status, or incident count can be addressed the same way except by adding the CA address (0 through 5) to the base register.
3. For NCP or PEP, CXFCDSIN initializes this table by using data from the configuration data set (CDS) subset passed by MOSS.

CSP Identifier Group—Same format for all 16 bytes

0(0) ASTCSPID* Identifier for CSP 0	1(1) Identifier for CSP 1	2(2) Identifier for CSP 2	3(3) Identifier for CSP3
4(4) Identifier for CSP 4	5(5) Identifier for CSP 5	6(6) Identifier for CSP 6	7(7) Identifier for CSP 7

*Indicates a byte expansion follows.

CSP Identifier Group—Same format for all 16 bytes (Continued)

8(8) Identifier for CSP 8	9(9) Identifier for CSP 9	10(A) Identifier for CSP A	11(B) Identifier for CSP B
12(C) Identifier for CSP C	13(D) Identifier for CSP D	14(E) Identifier for CSP E	16(F) Identifier for CSP F

CSP Status Group—Same format for all 16 bytes

16(10) ASTCSPST* Status for CSP 0.	17(11) Status for CSP 1.	18(12) Status for CSP 2.	19(13) Status for CSP 3.
20(14) Status for CSP 4.	21(15) Status for CSP 5.	22(16) Status for CSP 6.	23(17) Status for CSP 7.
24(18) Status for CSP 8.	25(19) Status for CSP 9.	26(1A) Status for CSP A.	27(1B) Status for CSP B.
28(1C) Status for CSP C.	29(1D) Status for CSP D.	30(1E) Status for CSP E.	31(1F) Status for CSP F.

CSP Incident Count Group

32(20) ASTCSPCT Incident count for CSP 0.	33(21) Incident count for CSP 1.	34(22) Incident count for CSP 2.	35(23) Incident count for CSP 3.
36(24) Incident count for CSP 4.	37(25) Incident count for CSP 5.	38(26) Incident count for CSP 6.	39(27) Incident count for CSP 7.
40(28) Incident count for CSP 8.	41(29) Incident count for CSP 9.	42(2A) Incident count for CSP A.	43(2B) Incident count for CSP B.
44(2C) Incident count for CSP C.	45(2D) Incident count for CSP D.	46(2E) Incident count for CSP E.	47(2F) Incident count for CSP F.

*Indicates a byte expansion follows.

CA Identifier Group—Same format for all six bytes

48(30) ASTCAID* Identifier for CA position 1.	49(31) Identifier for CA position 2.	50(32) Identifier for CA position 3.	51(33) Identifier for CA position 4.
52(34) Identifier for CA position 5.	53(35) Identifier for CA position 6.	54(36) Reserved	

CA Status Group—Same format for all six bytes

56(38) ASTCAST* Status for CA position 1.	57(39) Status for CA position 2.	58(3A) Status for CA position 3.	59(3B) Status for CA position 4.
60(3C) Status for CA position 5.	61(3D) Status for CA position 6.	62(3E) Reserved	

CA Incident Count Group

64(40) ASTCACT Incident count for CA position 1.	65(41) Incident count for CA position 2.	66(42) Incident count for CA position 3.	67(43) Incident count for CA position 4.
68(44) Incident count for CA position 5.	69(45) Incident count for CA position 6.	70(46) Reserved	

72(48) ASTAIOUC AIO unresolved incident count.	73(49) ASTPIOUC PIO unresolved incident count.	74(4A) ASTADTUC Adapter unresolved incident count.	75(4B) ASTGLIUC Get-Line-ID cmd retry count.
76(4C) ASTCAREF CA threshold refresh value.	77(4D) ASTCSREF CSP threshold refresh value.	78(4E) ASTURREF Unresolved threshold refresh value.	79(4F) ASTGLREF Get-Line-ID cmd threshold refresh value.
80(50) ASTL1BP Pointer back to L1B control block.			

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Comments
0(0)–15(F) ASTCSPID		CSP identifier
	1.	CSP not installed.
	.x	1=This CSP identifier is associated with a LAB Type B. 0=This CSP identifier is associated with a LAB Type A.
	. . .x	1=Second CSP identifier for the LAB. 0=First CSP identifier for the LAB.
	001	CSP load module identifier.
16(10)–31(1F) ASTCSPST		CSP status indicators
	1.	Interrupt from CSP when it was disconnected.
	.1	IOH instruction to CSP failed twice.
	. . .1	CSP down due to CSP L1 interrupt.
	. . . . 1. . .	CSP down due to redrive being disabled.
	. . . . .1 . .	CSP down due to exceeding incident limit.
	. . . . . .1 .	CSP down due to MOSS command.
	1	Permanent CSP error or CSP not installed.
48(30)–53(35) ASTCAID		CA identifier
	1.	CA not installed.
	.1	CA has Two Processor Switch.
	. .0	Always zero.
	xxx	CA select mask 000=CA position 1 001=CA position 2 010=CA position 3 011=CA position 4 100=CA position 5 101=CA position 6
56(38)–61(3D) ASTCAST		CA status indicators
	1.	CA active for NCP.
	.1	CA active for EP.
	. .1	Control program attempted to disable the CA.
	1	Permanent CA error.

ADDRESS TRACE BLOCK ATB

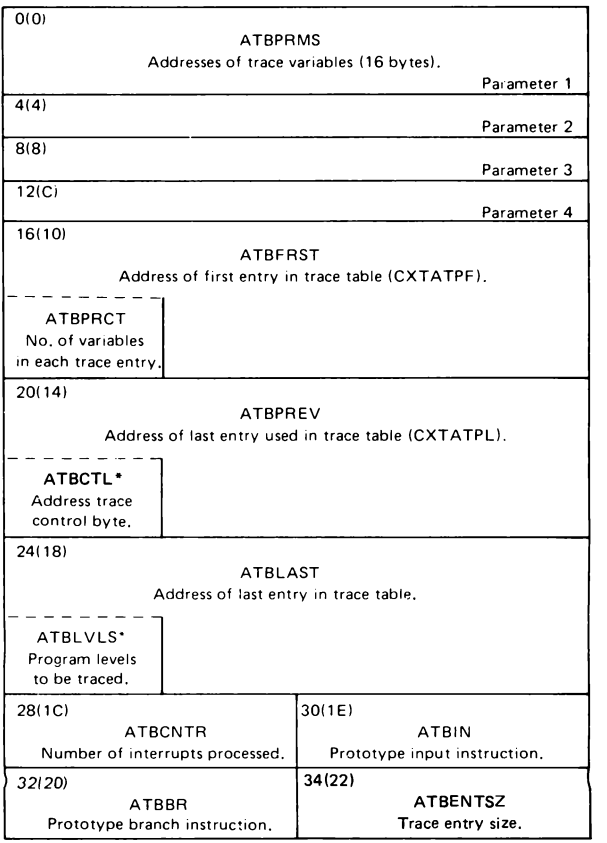
Program: NCP

Size in bytes: 60(3C)

Created by: NCP generation.

Pointer to ATB: SYSATBP field in HWE.

Function: Governs the operation of the address trace function executing in level 1.



*Indicates a byte expansion follows.

36(24) ATBECTL* Address trace enhancement control.	ATBTRAP Address of the trap routine. (ACITRAP CSECT)		
40(28) ATBDLOC* Data Location control.	ATBDATAL Data address or offset.		
44(2C) ATBRIN Input Rx to R3 instruction placeholder		46(2E) Reserved	
48(30) ATBOP1M OP1 mask.		50(32) ATBOP2M OP2 mask.	
52(34) ATBO1CTL* OP1 control.	53(35) ATBO2CTL* OP2 control.	54(36) ATBTACT* True action control.	55(37) ATBFACT* False action control.
56(38) ATBDATA Halfword of data analyzed.		58(3A) ATBSTPCT Stop-trace-on-count counter.	

Offset/Field Name	Bit Pattern/ Hex Value	Contents
20(14) ATBCTL		Address trace control byte.
	xxxx	Program levels to be traced. • Before trace activation X'0' • After trace activation X'8' Level 2 X'4' Level 3 X'2' Level 4 X'1' Level 5
	 xxxx	Address trace type variables (bit 4=variable #4 . . . bit 7=variable #1) 1=Register or displacement 0=Storage
24(18) ATBLVLS		Program levels to be traced.
	X'80' X'40' X'20' X'10'	Level 2. Level 3. Level 4. Level 5.
36(24) ATBECTL		Address trace enhancement control.
	1...	Address trace enhancement active.
	.1..	UNCOND branch to trap.
	.... 1...	OP2 result is true.
	.... .1..	Stop trace on count.
40(28) ATBDLOC		Data location control.
	1...	Storage address.
	.1..	Data in register.
	..1.	Address in register plus offset.
52(34) ATBO1CTL		OP1 control.
	1...	OP1 is an AND operation.
	.1..	OP1 is an XOR operation.
53(35) *ATBO2CTL*		OP2 control.
	1...	OP2 is an AND operation.
	.1..	OP2 is an XOR operation.
	..1.	OP2 is a COMPARE operation.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
54(36) ATBTACT		True-action and false-action control.
55(37) ATBFACT	x...	1=Ignore. 0=Trace.
	.1..	Stop trace.
	..1.	Stop CCU.
	...1	Abend or IPL (abend X'0500').
	.... 1...	Branch to trap routine (ACITRAP CSECT).

ADAPTER CONTROL BLOCK EXTENSION — AXB (NCP)

Program: NCP

Size in bytes: 36(24) or 40(28) if 3725 PEP extended.

Created by: NCP generation.

Located in: $LVL5

Pointer to AXB: CCBAXBP field in the CCB.

Function: Contains line control information.

<table>
<tr><td colspan="4">0(0)
AXBCCBP
Back pointer to CCB.</td></tr>
<tr><td colspan="4">4(4)
AXBLPCMD
Save area for command field value.
AXBSDIAL
Pointer to dial digits for switched line.</td></tr>
<tr><td>8(8)
AXBTCTL*
ACB trace entry control byte.</td><td>9(9)
Reserved</td><td colspan="2">10(A)
ACB Trace entry 1.**</td></tr>
<tr><td colspan="2">12(C)
ACB Trace entry 1** Continued</td><td colspan="2">14(E)
ACB Trace entry 2.**</td></tr>
<tr><td colspan="2">16(10)
ACB Trace entry 2** continued</td><td colspan="2">18(12)
ACB Trace entry 3**</td></tr>
<tr><td colspan="2">20(14)
ACB Trace entry 3** continued.</td><td>22(16)
AXBLPAF
LPDA 'A' field.</td><td>23(17)
AXBLPCF
LPDA 'C' field.</td></tr>
</table>

*Indicates that a byte expansion follows.
***See ACB Trace Entry* Formats that follow.
The ACB trace entry formats can occur in any combination within offsets 10(A) through 21(15).

24(18) AXBLPIF LPDA 'I' field.	25(19) Reserved	26(1A) AXBMULTB Multiple buffer lease amount.
28(1C) AXBR1 Command and line address in scanner.		30(1E) AXBR2 Scanner address and E bit. (Character or Normal mode)
32(20) AXBPQCQP Pointer to the SS/BSC QCB whose task is triggered upon completion of a queued commit.		

3725 PEP Extended Features (PRPQ P85032)

36(24) XFAFLGS1 Flags 1	37(25) XFAFLGS2 Flags 2	38(26) XFALNAD Virtual LNVT address.

40(28) AXBCBL2 Saved CCBL2 for all backup timeouts.	42(2A) AXBPCMD Command saved when issuing Line Dump X'F5' command.	43(2B) Reserved

PSA Trace Function Expansion

44(2C) AXB1SSCF Status control field 1.	45(2D) AXB1CMD Command field 1.	46(2E) AXB1SES Secondary status field 1.	47(2F) AXB1LSTA Line communication field 1.
48(30) AXB2SSCF Status control field 2.	49(31) AXB2CMD Command field 2.	50(32) AXB2SES Secondary status field 2.	51(33) AXB2LSTA Line communication field 2.
52(34) AXB3SSCF Status control field 3.	53(35) AXB3CMD Command field 3.	54(36) AXB3SES Secondary status field 3.	55(37) AXB3LSTA Line communication field 3.

56(38) AXB4SSCF Status control field 4.	57(39) AXB4CMD Command field 4.	58(3A) AXB4SES Secondary status field 4.	59(3B) AXB4LSTA Line communi-cation field 4.
60(3C) AXBTROFF Offset into PSA trace table.	61(3D) Reserved		

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
8(8) AXBTCTL	 xx	ACB trace entry control byte. Entry control bits 00 = Entry 1 next. 01 = Entry 2 next. 10 = Entry 3 next.

ACB Trace Entry Formats

Command End Entry

	1(1) RNTI (Byte ; TIMH field in XI	2(2) IOBSTAT field (BSC/SS) LXBSTAT field (SDLC)

Reset Entry

0(0) IOBCMAND field (BSC/SS) LXBCMAND field (SDLC)	1(1) RNTIME (Byte 1 of TIMH6 field in XDH)	2(2) IOBIMCTL field (BSC/SS) LXBIMCTL field (SDLC)	3(3) X'D9' Reset entry ID.

SDLC Level 3 Ent

0(0) CCBCTL field.	1(1) CCBRBLUC field or CCBCFLD field if duplex trar mit.	2(2) CCBEND1 field

BLOCK CONTROL UNIT (BSC/SS)

Program: NCP

Size in bytes: 48(30) control bytes plus BTU plus prefix.

Located in: Dynamic buffers.

Created by: Built dynamically by internal routines.

Function: To request work.

Buffer Prefix

-4(-4) BHBHTG* Buffer tag	-3(-3) Reserved	-2(-2) BHVVTI Buffer virtual route vector table index.	
0(0) BCBUFCHN Buffer prefix chain field.			
4(4) BCCOPYF Copy field		6(6) BCOFFSET Buffer prefix data offset field.	7(7) BCDATCNT Buffer prefix data count field.
	5(5) BCCOPYS* Copy status		
BCCOPCT Copy count			

*See the buffer prefix (BH) for expansions.

Event Control Block

8(8) BCUECHN ECB chain pointer.			
BCUESTAT* Event status flags.			
12(C) BCUCSTAT* Block status flags.	13(D) Reserved	14(E) BCUTMINT (BCUBKLNG) Set time interval, as specified by SETIME macro.	
		BCUTCNT BCU text count.	
16(10) BCUWQCB Address of waiting task's input QCB.			
20(14)–35(23) Alignment Bytes			

Work Area

36(24) Reserved	38(26) BCUTDSP Get byte/put byte displacement value.	
40(28) BCURVTE Address of RVT entry.		
44(2C) BCUSSP Subtask sequence pointer for suspended sessions.	46(2E) BCUREDS Record descriptor.	47(2F) BCUFLAGS* Critical text flags to channel output. BCUIWA
48(30) See "Basic Transmission Unit (BTU)" for format. (Variable in length)		

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
8(8) BCUESTAT	 1... .... .1..	Event status flags. Event is satisfied. Task is to be dispatched.
12(C) BCUCSTAT	 1... .... .1.. .... ..1.	Block status flags. Block enqueued. Buffers in block are counted. SOH status message
47(2F) BCUFLAGS	 1... .... .1.. .... ..1. ....1 .... 1...	Critical text flags to channel output. Clear data in release blocks. Replace-session-initiation-information reset mode. Check mode for replace-session-initiation-information. Second pass. Third pass.

BOX ERROR RECORD BER

Program: NCP, EP, PEP

Size in bytes: Variable, depending on the BER format.

Created by: Macro CXTBER generates the BER when needed.

Pointer to BER: None

Function: BERs reside in check record pool (CRP) entries when the data is gathered originally and in NCP buffers when the data is sent to MOSS. The first 6-bytes of all BERs are common; then the formats depend on the type of error for which the BER is being build.

Note: The data shown here begins two bytes into the CRP unit.

Common BER Header

0(0) BERLEN BER length.	1(1) BERTYP* BER type.	2(2) BERID BER ID	3(3) BERLRC Lost CRP record count.
4(4) BERABND Abend code			

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
1(1) BERTYP		BER type
	X'10'	Errors related to channel adapter operation.
	X'11'	Errors related to transmission subset operation (scanners).
	X'12'	Program exceptions.
	X'13'	CCU related errors.
	X'14'	Input/Output controller related errors.
	X'01'	MOSS related errors. Note: The following BER formats are listed in the above order.

TYPE 10 BERs

Level 1 CA—PIO Error Reported by I/O Controller

Applicable BER IDs:

- X'18' Trying to select a CA not installed.
- X'1C' Sequence of outputs to a CA in error.
- X'1E' Invalid output IOH to a CA.
- X'97' PIO error.
- X'9B' IOH failure during a CA PIO ERP.

	6(6) BER207E X'7E' CCU level 1 interrupt request register.
8(8) BER20IOC X'76' IOC error summary register	10(A) BER20II First 2-bytes of instruction
12(C) BER20LAR X'74' Lagging address register.	
16(10) BER00ER X'D' CA level 1 error register.	18(12) BER2076U X'76' PIO error on level 1.
20(14) BER20ETA TA field of IOH failure in level 1.	22(16) Reserved / 23(17) BER00CAA CA address
24(18) BER20FB* BER flag. / 25(19) BER20RHB Logical OR of redrive-error registers.	26(1A) BER20CL1 CLAB1 board—redrive address and error register.
28(1C) BER20CL2 CLAB2 board—redrive address and error register.	30(1E) BER20L3B LAB3 board—redrive address and error register.
32(20) BER20CAB CAB board—redrive address and error register.	34(22) BER20FDR FRDV board—redrive address and error register.
36(24) BER20L4B LAB4 board—redrive address and error register.	38(26) BER20L5B LAB5 board—redrive address and error register.
40(28) BER20L6B LAB6 board—redrive address and error register.	42(2A) BER20L7B LAB7 board—redrive address and error register.

*Indicates a byte expansion follows.

44(2C) BER20L8B LAB8 board—redrive address and error register.	46(2E) Reserved
48(30) BER20IAR Interrupted level's IAR BER20IL Interrupted level.	
52(34) BER20TA IOH/IOHI image—TA data.	54(36) BER20TD IOH/IOHI image—TD data.

Level 1 CA—AIO Error Reported by I/O Controller

Applicable BER IDs:

- X'14' Addressing exception.
- X'16' Storage protection.
- X'91' AIO error.
- X'9A' IOH failure during a CA AIO ERP.

	6(6) BER227E X'7E' CCU level 1 interrupt request register.
8(8) BER22IOC X'76' IOC error summary register.	10(A) BER2275 X'75' AIO cycle-steal control-word register.
12(C) Reserved	14(E) BER02ETA TA field of IOH failure in level 1.
16(10) BER02ER X'D' CA level 1 error register.	18(12) BER2276U X'76' PIO error in level 1.
20(14) BER02FPR The CA cycle-steal fixed-pointer register (X'3m').	

24(18) BER22FB* BER flag.	25(19) BER22RHB Logical OR of redrive–error registers.	26(1A) BER22CL1 CLAB1 board–redrive address and error register.
28(1C) BER22CL2 CLAB2 board–redrive address and error register.		30(1E) BER22L3B LAB3 board–redrive address and error register.
32(20) BER22CAB CAB board–redrive address and error register.		34(22) BER22FDR FRDV board–redrive address and error register.
36(24) BER22L4B LAB4 board–redrive address and error register.		38(26) BER22L5B LAB5 board–redrive address and error register.
40(28) BER22L6B LAB6 board–redrive address and error register.		42(2A) BER22L7B LAB7 board–redrive address and error register.
44(2C) BER22L8B LAB8 board–redrive address and error register.		46(2E) Reserved

*Indicates a byte expansion follows.

Level 1 Error Reported by Channel Adapter

Applicable BER IDs:

- X'10' Invalid ESC address—EP or user is CA owner.
- X'1B' Invalid input IOH to a CA.
- X'1F' Invalid output IOH to a CA.
- X'90' Invalid ESC address—EP is not a CA owner.
- X'92' Level 1 from CA in ERP state.
- X'93' CA driver or receiver check.
- X'94' Level 1 interrupt from an inactive CA.
- X'95' Unresolved CA adapter level 1 interrupt—(CA not identified in X'E' register.)
- X'96' CA bus-in check.
- X'98' Channel adapter internal error.
- X'99' CA ground-fault error.
- X'9C' IOH failure during a channel adapter ERP.
- X'9E' Unresolved CA level 1 interrupt—(CA not identified in X'D' register.)
- X'9F' ESC interrupt—EP is not a CA owner.

<table>
<tr><td colspan="2"></td><td>6(6)
BER217E
X'7E' CCU level 1 interrupt request register.</td></tr>
<tr><td>8(8)
BER21IOC
X'76' IOC error summary register</td><td>10(A)
BER01CAA
CA select bits</td><td>11(B)
Reserved</td></tr>
<tr><td colspan="3">12(C)
BER01LAR
X'74' Lagging address register.</td></tr>
<tr><td>16(10)
BER01ER
X'D' CA level 1 error register.</td><td colspan="2">18(12)
BER2176U
X'76' PIO error in level 1.</td></tr>
</table>

20(14) BER21BRR Redrive response-to-poll.		22(16) BER01CAR X'E' CA error register.
24(18) BER21FB* BER flag.	25(19) BER21RHB Logical OR of redrive-error registers.	26(1A) BER21CL1 CLAB1 board—redrive address and error register.
28(1C) BER21CL2 CLAB2 board—redrive address and error register.		30(1E) BER21L3B LAB3 board-redrive address and error register.
32(20) BER21CAB CAB board—redrive address and error register.		34(22) BER21FDR FRDV board—redrive address and error register.
36(24) BER21L4B LAB4 board—redrive address and error register.		38(26) BER21L5B LAB5 board—redrive address and error register.
40(28) BER21L6B LAB6 board—redrive address and error register.		42(2A) BER21L7B LAB7 board—redrive address and error register.
44(2C) BER21L8B LAB8 board—redrive address and error register.		46(2E) Reserved
48(30) BER21TA TA field of IOH failure in level 1.		

*Indicates a byte expansion follows.

Level 3 CA and CCU Errors

Applicable BER IDs:

- X'33' Unresolved CA level 3 interrupt.
- X'34' Level 3 IPL configuration check.
- X'35' ESC address not within range—(EP on level 3 interrupt.)
- X'B1' Unresolved CA level 3 initial-select interrupt.
- X'B2' Unresolved CA level 3 data/status interrupt.
- X'B5' Level 3 cannot disable CA.
- X'B6' On stacked-initial status—command not NOP or TIO (EP only).

	6(6) BERAAR77 X'77' Adapter levels 2, 3 interrupt request register.
8(8) BERAAR7F X'7F' CCU levels 2, 3, 4 interrupt request register.	10(A) BERAAR60 X'0' CA initial selection register.
12(C) BERAAR61 X'1' CA CCW & subchnl address.	14(E) BERAAR62 X'2' Data status register.
16(10) BERAAR63 X'3' CA ESC subchannel address and status register.	18(12) BERAAR64 X'4' CA PIO bytes 1 & 2.
20(14) BERAAR65 X'5' CA PIO bytes 3 & 4.	22(16) BERAAR66 X'6' CA NSC status register.
24(18) BERAAR67 X'7' CA enabled indications.	26(1A) BERAAR6B X'B' CA-ESC TIO address and status register.
28(1C) BERAAR6C X'C' CA-AIO operations register.	30(1E) BERAAR6F X'F' CA level 3 interrupt request register.

TYPE 11 BERs

Level 1 CSP—PIO Error Reported by I/O Controller

Applicable BER IDs:

- X'18' IOH/IOHI issued to transmission subset (TSS) not installed.
- X'1B' Invalid Input IOH issued to TSS.
- X'97' TSS PIO error—Output IOH/IOHI (count $\leq$ limit).
- X'98' TSS PIO error—Output IOH/IOHI (count $>$ limit).
- X'9C' TSS PIO error—Input Get-line-ID operation code.

<table>
<tr><td colspan="2"></td><td>6(6)
BER207E
X'7E' CCU level 1 interrupt request register.</td></tr>
<tr><td colspan="2">8(8)
BER20IOC
X'76' IOC error summary register.</td><td>10(A)
BER20II
First 2-bytes of instruction.</td></tr>
<tr><td colspan="3">12(C)
BER20LAR
X'74' Lagging address register.</td></tr>
<tr><td colspan="2">16(10)
BER10CSP
CSP error status register.</td><td>18(12)
BER2076U
X'76' PIO error in level 1.</td></tr>
<tr><td colspan="2">20(14)
BER20ETA
TA field of IOH failure in level 1.</td><td>22(16)
Reserved</td></tr>
<tr><td>24(18)
BER20FB*
BER flag.</td><td>25(19)
BER20RHB
Logical OR of redrive—error registers.</td><td>26(1A)
BER20CL1
CLAB1 board—redrive address and error register.</td></tr>
<tr><td colspan="2">28(1C)
BER20CL2
CLAB2 board—redrive address and error register.</td><td>30(1E)
BER20L3B
LAB3 board—redrive address and error register.</td></tr>
</table>

*Indicates a byte expansion follows.

32(20) BER20CAB CAB board—redrive address and error register.	34(22) BER20FDR FRDV board—redrive address and error register.
36(24) BER20L4B LAB4 board—redrive address and error register.	38(26) BER20L5B LAB5 board—redrive address and error register.
40(28) BER20L6B LAB6 board—redrive address and error register.	42(2A) BER20L7B LAB7 board—redrive address and error register.
44(2C) BER20L8B LAB8 board—redrive address and error register.	46(2E) Reserved
48(30) BER20IAR Interrupted level's IAR BER20IL Interrupted level.	
52(34) BER20TA IOH/IOHI image—TA data.	54(36) BER20TD IOH/IOHI image—TD data.

Level 1 CSP—AIO Error Reported by I/O Controller

Applicable BER IDs:

- X'14' Addressing exception.
- X'16' Storage protection.
- X'91' TSS AIO error (TSS retries once).
- X'92' TSS AIO error unresolved.
- X'93' TSS AIO invalid CCW (TSS retries once).

<table>
<tr><td colspan="2"></td><td>6(6)
BER227E
X'7E' CCU level 1 interrupt request register.</td></tr>
<tr><td colspan="2">8(8)
BER22IOC
X'76' IOC error summary register.</td><td>10(A)
BER2275
X'75' AIO cycle-steal control-word register.</td></tr>
<tr><td colspan="2">12(C)
Reserved</td><td>14(E)
BER22ETA
TA field of IOH failure in level 1</td></tr>
<tr><td colspan="2">16(10)
BER12CSP
CSP error status register.</td><td>18(12)
BER2276U
X'76' PIO error in level 1.</td></tr>
<tr><td colspan="3">20(14)
BER12SPR
The CSP shared-pointer register (X'3F')</td></tr>
<tr><td>24(18)
BER22FB*
BER flag</td><td>25(19)
BER22RHB
Logical OR of redrive—error registers.</td><td>26(1A)
BER22CL1
CLAB1 board—redrive address and error register.</td></tr>
<tr><td colspan="2">28(1C)
BER22CL2
CLAB2 board—redrive address and error register.</td><td>30(1E)
BER22L3B
LAB3 board—redrive address and error register.</td></tr>
</table>

*Indicates a byte expansion follows.

32(20) BER22CAB CAB board—redrive address and error register.	34(22) BER22FDR FRDV board—redrive address and error register.
36(24) BER22L4B LAB4 board—redrive address and error register.	38(26) BER22L5B LAB5 board—redrive address and error register.
40(28) BER22L6B LAB6 board—redrive address and error register.	42(2A) BER22L7B LAB7 board—redrive address and error register.
44(2C) BER22L8B LAB8 board—redrive address and error register.	46(2E) Reserved

Level 1 Error Reported by Communications Scanner Processor

Applicable BER IDs:

- X'1E' Invalid Output IOH to transmission subset (TSS).
- X'95' TSS hardstop.
- X'96' TSS disconnect state.
- X'99' TSS adapter error.
- X'9A' Unresolved TSS adapter error.
- X'9B' Interrupt received from disconnected TSS.

<table>
<tr><td colspan="2"></td><td colspan="2">6(6)
BER217E
X'7E' CCU level 1 interrupt request register.</td></tr>
<tr><td colspan="2">8(8)
BER21IOC
X'76' IOC error summary register.</td><td>10(A)
BER21CSA
CSP address.</td><td>11(B)
Reserved</td></tr>
<tr><td colspan="4">12(C)
Reserved</td></tr>
<tr><td colspan="2">16(10)
BER11CSP
CSP error status register.</td><td colspan="2">18(12)
BER2176U
X'76' PIO error in level 1.</td></tr>
<tr><td colspan="2">20(14)
BER21BRR
Redrive response-to-poll.</td><td colspan="2">22(16)
Reserved</td></tr>
<tr><td>24(18)
BER21FB*
BER flag.</td><td>25(19)
BER21RHB
Logical OR of redrive—error registers.</td><td colspan="2">26(1A)
BER21CL1
CLAB1 board—redrive address and error register.</td></tr>
</table>

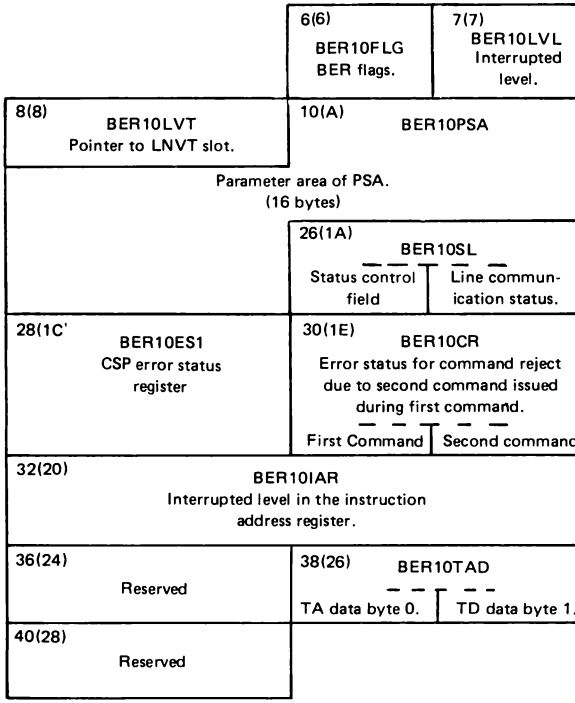
*Indicates a byte expansion follows.

28(1C) BER21CL2 CLAB2 board—redrive address and error register.	30(1E) BER21L3B LAB3 board—redrive address and error register.
32(20) BER21CAB CAB board—redrive address and error register.	34(22) BER21FDR FRDV board—redrive address and error register.
36(24) BER21L4B LAB4 board—redrive address and error register.	(38(26) BER21L5B LAB5 board—redrive address and error register.
40(28) BER21L6B LAB6 board—redrive address and error register.	42(2A) BER21L7B LAB7 board—redrive address and error register.
44(2C) BER21L8B LAB8 board—redrive address and error register.	46(2E) Reserved

Level 1 Error Reported by Communications Scanner Processor

Applicable BER IDs:

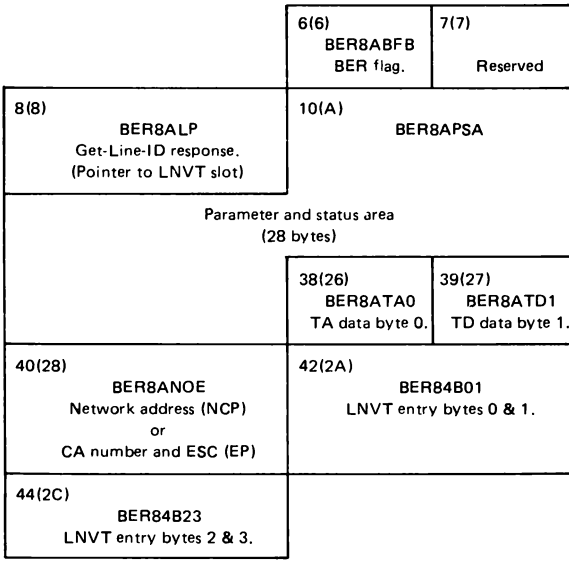
- X'1C' Command reject by TSS.



Level 2 Communications Scanner Processor Unresolved Error

Applicable BER ID:

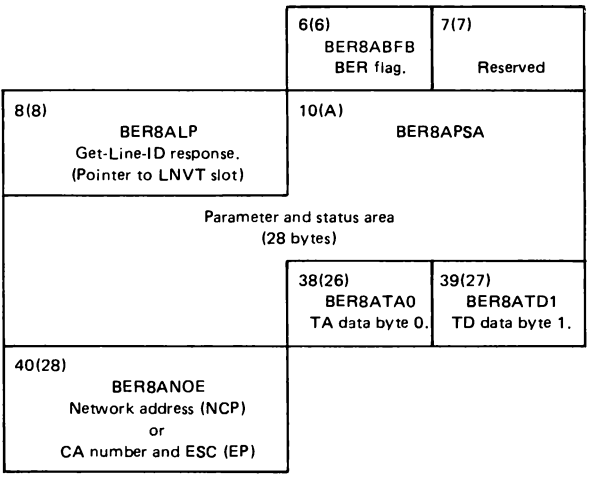
- X'A1' Unresolved level 2 interrupt.



Level 2 CSP Internal Error

Applicable BER ID:

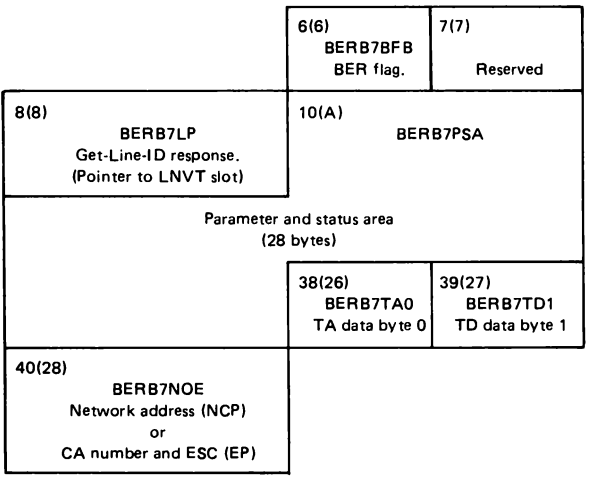
- X'A2' Internal box error reported via level 2.
- X'A4' Transient line error



Level 3 CSP Command Timeout

Applicable BER ID:

- X'B1' Communications scanner processor command timeout.

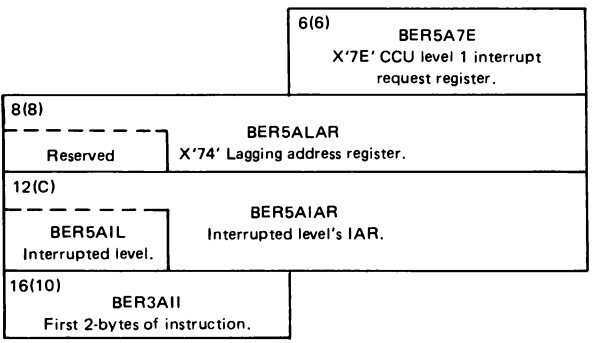


TYPE 12 BERs

Level 1 Program Exceptions Error

Applicable BER IDs:

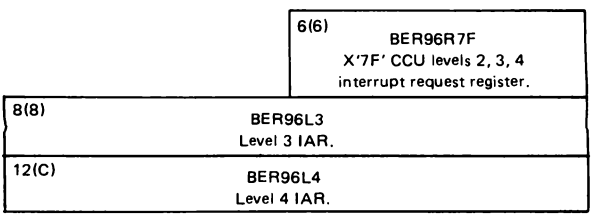
- X'11' Level 5 code executes In/Out or IOH/IOHI instruction.
- X'12' Invalid operation code.
- X'13' Addressing exception on instruction fetch.
- X'14' Addressing exception on instruction execution.
- X'15' Storage protection on instruction fetch.
- X'16' Storage protection on instruction execution.
- X'17' Level 5 branch to location 0 (reported as level 5 In/Out).
- X'18' User branch to location 0 (reported as storage protect on fetch).
- X'19' Logic error—interrupt reason lost.



Level 2 Program-Controlled Interrupt

Applicable BER ID:

- X'21' Level 2 PCI.

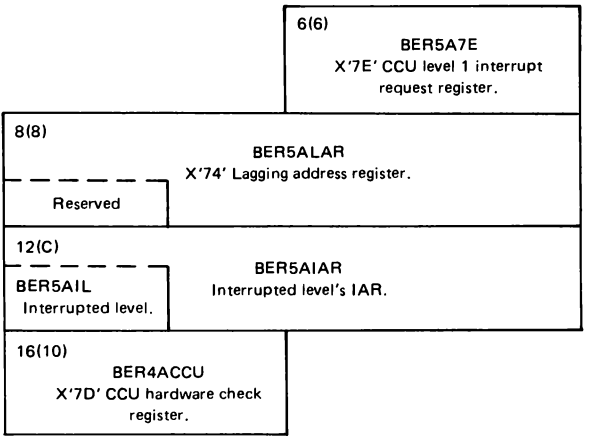


TYPE 13 BERs

Level 1 CCU Related Check Error

Applicable BER IDs:

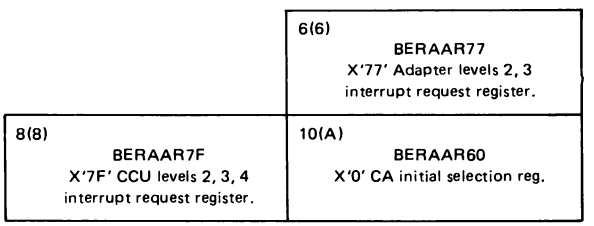
- X'91' Unresolved level 1 interrupt.
- X'92' Unresolved interrupted level (when requested).
- X'93' CCU hard check—should not occur.
- X'94' IPL—should not occur.
- X'95' Invalid level 1 interrupted IAR (IN X'79').



Level 3 CA and CCU Errors

Applicable BER IDs:

- X'32' Level 3 interrupt configuration check.
- X'B1' Unresolved level 3 interrupt.



12(C) BERAAR61 X'1' CA CCW & subchannel address.	14(E) BERAAR62 X'2' Data status register.
16(10) BERAAR63 X'3' CA ESC subchannel address and status register.	18(12) BERAAR64 X'4' CA PIO Bytes 1 & 2.
20(14) BERAAR65 X'5' CA PIO bytes 3 & 4.	22(16) BERAAR66 X'6' CA NSC status register.
24(18) BERAAR67 X'7' CA enabled indications.	26(1A) BERAAR6B X'B' CA—ESC TIO address and status register.
28(1C) BERAAR6C X'C' CA—AIO operations register.	30(1E) BERAAR6F X'F' CA level 3 interrupt request register.

Level 4 CCU Errors

Applicable BER IDs:

- X'C1' Unresolved level 4 interrupt. No level 4 hardware latches on.
- X'C2' Unresolved level 4 PCI hardware interrupt.
- X'C3' Continuous or unresolved level 4 PCI hardware interrupt (same as X'C2' except level 4 retry count = 0).
- X'C4' Unresolved level 4 SVC interrupt.
- X'C5' Continuous or unresolved level 4 MOSS request hardware interrupt.
- X'C6' Continuous or unresolved level 4 MOSS status hardware interrupt.

	6(6) BERCAR77 X'77' Adapter levels 2, 3 interrupt request register.
8(8) BERCAR7F X'7F' CCU levels 2, 3, 4 interrupt request register.	10(A)–17(11) BERCAL4B
Level 4 router control block.	

TYPE 14 BERs

Level 1 I/O Controller Related Errors

Applicable BER IDs:

- X'91' Unresolved level 1.
- X'92' Unresolved AIO level 1 interrupt.
- X'93' Unresolved PIO level 1 interrupt.
- X'95' All read redrive error registers failed.

		6(6) BER6A7E X'7E' CCU level 1 interrupt request register.
8(8) BER6AIOC X'76' IOC error summary register.		10(A) BER6A75 X'75' AIO cycle-steal control word register.
12(C) BER6ALAR X'74' Lagging address register.		
16(10) Reserved		18(12) BER6A76U X'76' PIO error in level 1.
20(14) Reserved		
24(18) BER6AFB* BER flag.	25(19) BER6ARHB Logical OR of redrive—error registers.	26(1A) BER6ACL1 CLAB1 board—redrive address and error register.
28(1C) BER6ACL2 CLAB2 board—redrive address and error register.		30(1E) BER6AL3B LAB3 board—redrive address and error register.
32(20) BER6ACAB CAB board—redrive address and error register.		34(22) BER6AFDR FRDV board—redrive address and error register.

*Indicates a byte expansion follows.

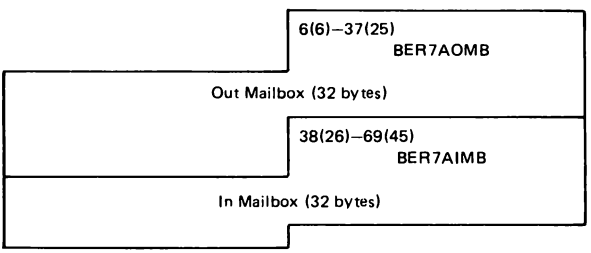
36(24) BER6AL4B LAB4 board—redrive address and error register.	38(26) BER6AL5B LAB5 board—redrive address and error register.
40(28) BER6AL6B LAB6 board—redrive address and error register.	42(2A) BER6AL7B LAB7 board—redrive address and error register.
44(2C) BER6AL8B LAB8 board—redrive address and error register.	46(2E) Reserved

TYPE 01 BERs

Level 1 MOSS Down Error

Applicable BER IDs:

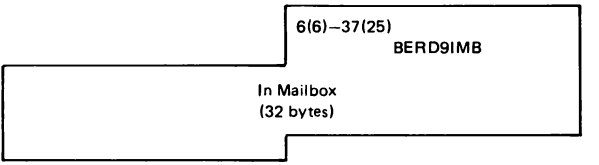
- X'91' MOSS down level 1.



Level 4 MOSS Inbound Error

Applicable BER ID:

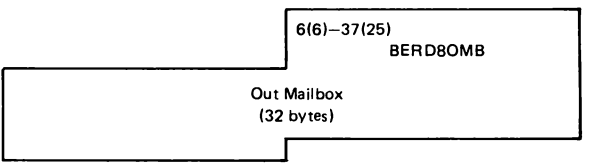
- X'C2' NCP–MOSS interface error (level 4 in In Mailbox request).



Level 4 MOSS Outbound and Command Timeout Errors

Applicable BER IDs:

- X'C2' NCP–MOSS interface error (level 4 In Mailbox timeout).
- X'C1' NCP–MOSS interface error (level 4 Out Mailbox request).



Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18)		Box error record flags.
	x...	1=Control program is NCP or PEP 0=Control program is EP.
BER20FB	.1..	Adapter down.
BER21FB	..1.	Control program put adapter down.
BER22FB	...1	First CSP on board is down or
BER6AFB		error on invalid ESC.
	.... 1...	Second CSP on board is down.
	.... .1..	Error on Get Error Status.
	.... ..1.	CA is being disabled.
	1	IOH or IOHI on level 1 failed twice.

Program: NCP

Size in bytes: 40(28)

Created by: NCP generation.

Called by: Background programs.

Pointer to BGS: SYSSV5P field in HWX

Function: Background register savearea.

0(0) BGSBCHN Back chain field.
4(4) BGSFCHN Forward chain field.
8(8)–39(27) BGSAVERG Register save area (8 words)

BUFFER PREFIX BH

Program: NCP

Size in bytes: 8(8) plus prefix.

Located in: The beginning of each buffer.

Created by: Any routine that uses the LEASE macro to get a buffer.

Pointer to BH: Variable.

Function: Chains buffers in a BCU and points to the beginning of the text data within a single buffer.

<table>
<tr><td>-4(-4)
BHBHTG*
Buffer tag</td><td>-3(-3)
Reserved</td><td colspan="2">-2(-2)
BHVVTI
Buffer virtual route vector table index.</td></tr>
<tr><td colspan="4">0(0)
BHBUFCHN
Buffer prefix chain field.</td></tr>
<tr><td colspan="2">4(4)
BHCOPYF
Copy field</td><td rowspan="2">6(6)
BHOFFSET
Offset to beginning of text in this buffer.</td><td rowspan="2">7(7)
BHDATCNT
Text data count (for this buffer only).</td></tr>
<tr><td>BHCOPCT
Copy count</td><td>5(5)
BHCOPYS*
Copy status</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
-4(-4) BHBHTG		Buffer tag
	1...	Buffer is not in free buffer pool.
	1...	Buffer is initialized to the line or link.
	.1..	Buffer is chained.
	..1.	Buffer is enqueued to QCB.
	...1	Buffer is unchained.
5(5) BHCOPYS		Copy status
	.1..	PIU is a copy.

BLOCK HANDLER DRIVER TABLE — BHD

Program: NCP

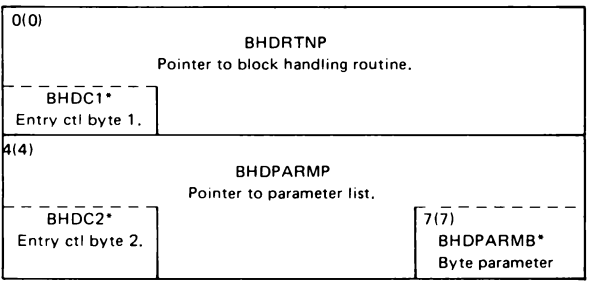
Size in bytes: 8(8) per entry; total size of table is variable.

Created by: NCP generation.

Pointer to BHD: BHS

Function: Defines the block handling routines that are to be executed for a particular block handler.

Entry Format



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		Entry control byte 1.
BHDC1	1...	End of table (last entry).
	.1..	User BHR.
	...1	Receive control if command is in error.
4(4)		Entry control byte 2.
BHDC2	1...	Receive control for Read.
	.1..	Receive control for Invite.
	..1.	Receive control for Write.
	.... 1...	Receive control for Disconnect.
	.... .1..	Receive control in terminator - subtask for Read I/O.
7(7)		Byte parameter (for date/time).
BHDPARMB	1...	Date desired.
	.1..	Calendar form of date desired.
	..1.	Julian format of date desired.
	...1	Gregorian format 1 of date desired.
	.... 1...	Gregorian format 2 of date desired.
	.... .1..	Time desired.
	.... ..1.	Date/time stamp first block of message.

BLOCK HANDLER ROUTINE EXTENSION TO DVB — BHR

Program: NCP

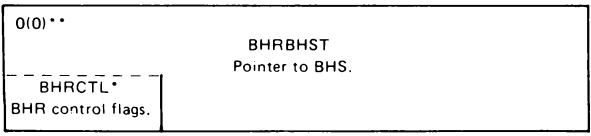
Size in bytes: 32(20)

Located in: DVB

Created by: NCP generation.

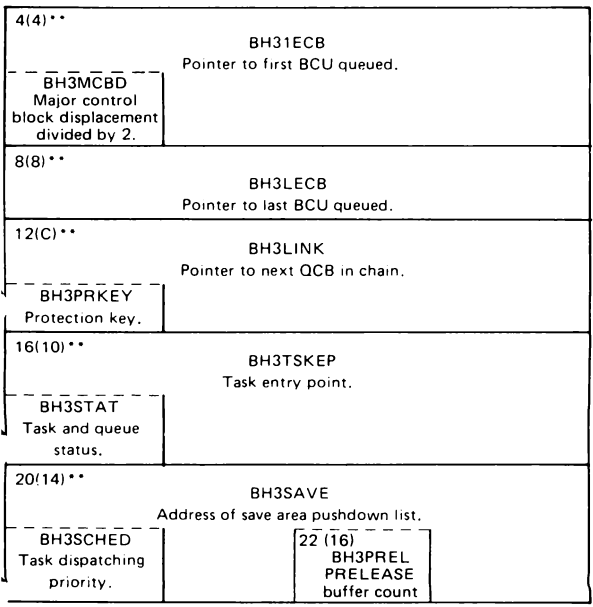
Pointer to BHR: DVBBHRO field in DVB.

Function: Associates block handler routines with a device.



Point 3 QCB (BHRBH3Q)

(See QCB for Input Queues for all bit definitions.)



*Indicates a byte expansion follows.

**Actual position depends upon other extensions to DVB.

24(18) BH3LUNK Pointer to previous QCB on the queue.	
BH3BHSCH BHR scheduling bits.	
28(1C) BH3BHSET BH set (or BHR) address.	
BH3BHRST BHR status bits.	

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		BHR control flags.
BHRCTL	1...	Execute BHR — If a BHR was specified as dynamic, specified initially as inactive, or deactivated by operator control, this bit will be off.
	.1..	Point 1 — specifies point 1 BHR execution.
	..1.	Point 2 — specifies point 2 BHR execution .
	...1	Point 3 — specifies point 3 BHR execution.
	1...	Point 3 — Block Handler Routine queue control block exists for device. This QCB is created by defining PT3EXEC=YES or BHEXEC=ALL. For dynamic block handlers that have a point 3, there must be a point 3 BHRQCB.

Program: NCP

Size in bytes: 12(C)

Created by: NCP generation.

Pointer to BHS: BSTBHSPT field in BST.

Function: Points to the block handlers that are to be executed for the block handler set.

0(0)	BHSP1 Pointer to point 1 block handler driver table (BHD).
4(4)	BHSP2 Pointer to point 2 BHD.
8(8)	BHSP3 Pointer to point 3 BHD.

Program: NCP

Size in bytes: PIU + 6 bytes

Function: This is the SDLC transmission block.

SDLC Line Control

0(0) Flag*	1(1) Address of secondary station.	2(2) Control*

PIU

3(3) **Path Information Unit** (See PIU FID0, -1, -2, -3, and -4 for description.)

SDLC Line Control

n Frame Check Sequence (2 bytes)	n+2 Flag* Same as 0(0).

*Indicates byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Function
0(0) Flag	0111 1110	Indicates beginning or end of BLU.
2(2)	Control "I" Format	
	xxx.	Receive count sequence.
	...x ...	Poll/final bit.
	.... xxx.	Send sequence count.
	0	Information transfer BLU.
	"S" Format	
	xxx.	Receive sequence count.
	...x	Poll/final bit.
	.... xx..	00=Receive ready (RR) 01=Receive not ready (RNR) 10=Reject
	01	Supervisory BLU
	"NS" Format	
	xxx. xx..	Nonsequenced command or response
	...x	Poll/final bit
	11	Nonsequenced format

Note: See Section 6 for descriptions of SDLC commands and responses.

BOUNDARY OUT QUEUE BOQ

Program: NCP

Size in bytes: 24(18)

Created by: NCP generation.

Pointed to by: CXQBOQ in the link edit map.

Function: Interface between INN and BNN. All BNN traffic is ENQUED to this queue.

Format: Standard input QCB
Task entry point is CXDCVRO
Task priority is immediate
Task is not reentrant

DESTINATION BOUNDARY POOL (BPOOL) BLOCK BPB

Program: NCP

Size in bytes: 12(C)

Created by: NCP generation.

Pointed to by: SYSBPBP field in HWE + 84(54).

Function: Contains size of the destination boundary pool, destination boundary pool thresholds and boundary pool status.

0(0) BPBSIZE Number of buffers in the BPOOL.	2(2) BPBCNT Number of allocated buffers.	
4(4) BPBTHRS1 BPOOL 62.5% threshold.	6(6) BPBTHRS2 BPOOL 75% threshold.	
8(8) BPBTHRS3 BPOOL 87.5% threshold.	10(A) BPBFLAGS* BPB status.	11(B) Reserved

*Indicates a byte expansion follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
10(A) BPBFLAGS		BPOOL block status
	1...	Reset window low priority (RWIL).
	.1..	Reset window medium priority (RWIM).
	..1.	Reset window high priority (RWIH).
	...1	BPOOL full.

BLOCK HANDLER SET TABLE — BST

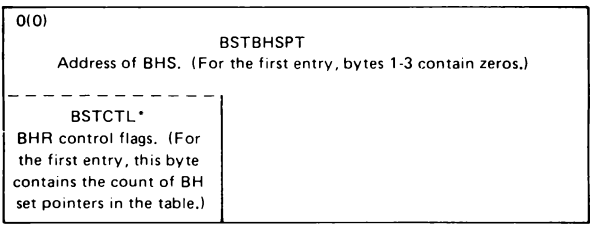
Program: NCP

Size in bytes: 4 bytes per entry; table can contain up to 256 entries.

Created by: NCP generation.

Pointer to BST: SYSBST field in XDA.

Function: Points to block handler sets (one entry per BHS).



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		BHR control flags.
BSTCTL	1...	Execute.
	.1..	Point 1.
	..1.	Point 2.
	...1	Point 3.

BRANCH TRACE TABLE BTT

Program: NCP, EP, PEP

Size in bytes: 24-byte header plus a variable number of 8-byte entries. The user specifies the number of entries on the Branch operand of the BUILD macro; minimum of 100 entries or 800 bytes, maximum of 8K entries or 64K bytes.

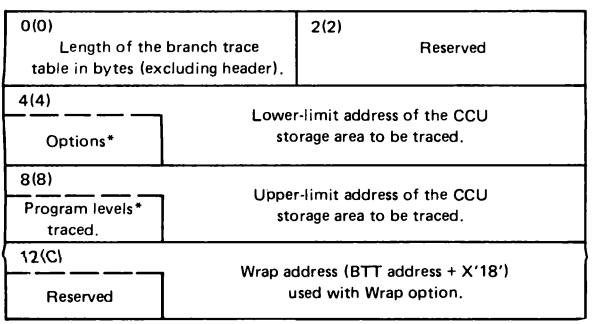
Created by: NCP or EP generation.

Pointer to BTT header: Address constant for CXTBTRC (NCP/PEP) or CYKBTRC (EP) located in the field at X'18' in CPIT.

Function: Contains a 24-byte header and a table of 8-byte entries. The hardware stores the originating storage address and the destination storage address and the program levels into the branch trace table when:

- A conditional or unconditional branch instruction is executed
- An instruction modifies the IAR (Register 0 of the active program level)
- A new program level is entered because the control program issued a PCI or an EXIT instruction, or an adapter caused an interrupt.

Branch Trace Table Header



*Indicates a byte expansion follows.

16(10) Reserved	Address of current (last) entry used.
20(14) Reserved	Address of end entry in table

Branch Trace Table

24(18) Originating program level.	First 8-byte entry Originating CCU storage address.
28(1C) Destination program level.	Destination CCU storage address.
≈	≈
n Originating program level.	Last 8-byte entry Originating CCU storage address.
n+4 Destination program level.	Destination CCU storage address.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4)		Options
	..1.	Branch trace has been activated.
	...1	Wrap option.
	.... 1...	Stop branch trace on address compare.
	.... .1..	Stop CCU
8(8)		Program levels traced.
	.1..	Level 1
	..1.	Level 2
	...1	Level 3
	.... 1...	Level 4
	.... .1..	Level 5

BASIC TRANSMISSION UNIT (BSC/SS)

Program: NCP

Size in bytes: 14(E) control bytes + variable-length text.

Located in: BCU

Created by: An internal NCP routine.

Pointer to BTU: None. The starting byte is at displacement 48(30) into the BCU.

Function: Contains information for either a request for I/O or for a control operation, or a response for the same.

<table>
<tr><td colspan="2">48(30)**
BCUSID
(BCHSID)
Source name.</td><td colspan="2">50(32)
BCUDID
(BCHDID)
Destination name (resource ID).</td></tr>
<tr><td colspan="2">52(34)
BCUSEQ
(BCHSEQ)
Request tag or sequence number identifying this BTU.</td><td>54(36)
BCUSRES
(BCHSRES)
System response. See Section 8 for responses.</td><td>55(37)
BCULRES
(BCHLRES)
Extended response. Contains status of I/O operation. See Section 8.</td></tr>
<tr><td>56(38)
BCUCMD*
(BCHCMD)
Command</td><td>57(39)
BCUMOD
(BCHMOD)
Command modifiers. See Section 3 for a list of the BTU commands and their modifiers.</td><td>58(3A)
BCUSFLAG*
(BCHSFLAG)
Function flags.</td><td>59(3B)
BCHBDUF*
BTU flags.</td></tr>
<tr><td colspan="2">60(3C)
BCUTLEN
(BCHTLEN)
Text length.</td><td colspan="2">62(3E)
Text field.
(Variable length.)</td></tr>
</table>

*Indicates a byte expansion follows.
**Displacements represent the offset into the BCU.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
56(38) BCUCMD ((BCHCMD)		Command. (See Section 3 for descriptions.)
	X'00'	Null.
	X'01'	Read (R).
	X'02'	Write (W).
	X'03'	Online test (T).
	X'05'	Invite (I).
	X'06'	Contact (C).
	X'07'	Disconnect (D).
	X'08'	Control (Z).
	X'77'	Unsolicited response.
	Any other	Invalid.
58(3A) BCUSFLAG (BCHSFLAG)		Function flags.
	1...	Checkpoint select (for control commands) or start of header.
	.1..	Header prefix.
	..1.	Suppress Invite (for control commands) or leading graphics.
	...1	First block of message.
	.... 1...	Transparent data.
	.... .1..	Positive acknowledgment.
	.... ..1.	Negative acknowledgment.
	1	Alternate acknowledgment.
59(3B) BCHBDUF		BTU flags.
	1...	Reset error lock.
	.1..	3270 poll for status.
	.... .1..	Suppress write response.
	.... ..1.	Selective text return.

SWITCHED BACKUP EXTENSION TO DVB — BUE

Program: NCP

Size in bytes: 4(4)

Located in: DVB

Created by: NCP generation.

Pointer to BUE: DVBBUO field in DVB.

Function: Contains control information for devices that can be contacted over a separate line when the current line fails.

0(0)	1(1)
BUEFLAGS* Flag byte.	BUEPLCBP Primary LCB pointer.

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		Flag byte
BUEFLAGS	1...	Service-seeking skip when the device is on a multipoint line.
	.... .1..	Error occurred in dialing out.
	.... ..1.	Invite pending remembrance.
	1	Back up in progress.

CHANNEL ADAPTER CONTROL BLOCK (Main) CAB (Main)

Program: NCP

Size in bytes: 128(80) plus prefix.

Created by: NCP generation.

Pointer to: SYSCAB field of HWE +24(18), CABCHAIN of preceding CAB, or CABMAINA of CAB (ext).

Function: Contains the parameters and control fields used by the channel adapter I/O supervisor. Each channel adapter has its own CAB.

Index

Name	Offset	Name	Offset	Name	Offset
CABATDI	92(5C)	CABIPIUO	113(71)	CABXR6D	66(42)
CABATDT	94(5E)	CABMMTO	102(66)	CABXR6E	68(44)
CABATD7I	98(62)	CABPIUSV	108(6C)	CABXR6F	70(46)
CABATOI	104(68)	CABRSX	39(27)	CABXR60	42(2A)
CABATOT	106(6A)	CABSEL	26(1A)	CABXR61	44(2C)
CABATO7I	100(64)	CABSENSE	38(26)	CABXR62I	46(2E)
CABCCMD	30(1E)	CABSNPM	112(70)	CABXR62O	48(30)
CABCHAIN	124(7C)	CABSTAT	32(20)	CABXR63	50(32)
CABCND	24(18)	CABSTATE	34(22)	CABXR66	56(38)
CABCNTL	114(72)	CABTGBP	116(74)	CABXR67I	58(3A)
CABCONFG	84(54)	CABTRCF	35(23)	CABXR67O	60(3C)
CABENABL	76(4C)	CABTYPE	36(24)	CABXR77	40(28)
CABEXTA	120(78)	CABWSX	37(25)	CXCAECB	−16(−10)
CABHWM	96(60)	CABXR3M	72(48)	WORK AREA	0(0)
CABICND	28(1C)	CABXR6C	64(40)	XXCXTCAB	−8(−8)

<table>
<tr><td colspan="4">−16(−10)
CXCAECB**
Event control block for leasing buffers.
(For format, see Event Control Block)</td></tr>
<tr><td colspan="4">−8(−8)
XXCXTCAB
Dump identifier characters.
(XCXTCABx, x=6, 5, 4, 3, 2, or 1)</td></tr>
<tr><td colspan="4">0(0)−23(17)
(CA control work area)</td></tr>
<tr><td colspan="2">24(18)
CABCND*
Channel condition flags.</td><td colspan="2">26(1A)
CABSEL*
Channel adapter selection mask.</td></tr>
<tr><td colspan="2">28(1C)
CABICND***
Condition flags on entry.</td><td colspan="2">30(1E)
CABCCMD*
Current channel command.</td></tr>
<tr><td colspan="2">32(20)
CABSTAT*
Current status byte.</td><td>34(22)
CABSTATE*
Buffer information</td><td>35(23)
CABTRCF*
CA trace flag.</td></tr>
<tr><td>36(24)
CABTYPE
Channel type (Always X'00' to indicate a CAB).</td><td>37(25)
CABWSX
Expected Write Start command.</td><td>38(26)
CABSENSE*
Sense byte to transfer for Sense command.</td><td>39(27)
CABRSX
Expected Read Start command.</td></tr>
</table>

*Indicates that a byte expansion follows.
**On first main CAB only.
*** See CABCND for flag definitions.

40(28) CABXR77 Save area for external register X'77'	42(2A) CABXR60 Save area for external register X'0' Initial selection.
44(2C) CABXR61 Save area for external register X'1' Init sel adr. & cmd.	46(2E) CABXR62I Input save area for external register X'2'.
48(30) CABXR62O Output save area for external register X'2'.	50(32) CABXR63 Save area for external register X'3' ESC adr. & status.
52(34) Reserved	
56(38) CABXR66 Save area for external register X'6' NSC status/control.	58(3A) CABXR67I Input save area for external register X'7' CA condition.
60(3C) CABXR67O Output save area for external register X'7' CA condition.	62(3E) Reserved
64(40) CABXR6C Output save area for external register X'C' cycle-steal control.	66(42) CABXR6D Save area for external register X'D' level 1 interrupt check.
68(44) CABXR6E Save area for external register X'E' level 1 interrupt requests.	70(46) CABXR6F Save area for external register X'F' level 3 interrupt requests.
72(48) CABXR3M Fixed pointer register '3m' where m is value 0 through 5 depending upon the CA address.	
76(4C) CABENABL CA enabled mask reg X'7'.	78(4E) Reserved

CAB
(Main)

80(50) Reserved	
84(54) CABCONFG* SSP channel options (8 bytes long)	
92(5C) CABATDI Attention delay (tenths of a second)	94(5E) CABATDT Timer decremented attention delay interval
96(60) CABHWM Attention delay PIU counter	98(62) CABATD7I Attention Delay — Defined on BUILD macro
100(64) CABATO7I Attention Time-out — Defined on BUILD macro	102(66) CABMMTO Channel monitor mode timer
104(68) CABATOI Attention time-out (tenths of a second)	106(6A) CABATOT Timer decremented attention time-out
108(6C) CABTRCFE* CA trace field.	
CABPIUSV Save area for ANS complete message address	

112(70) CABSNPM SSCP-NCP Session mask	113(71) CABIPIUO TH offset into PIU	114(72) CABCNTL* Channel adapter contact control flags

116(74) CABTGBP Pointer to transmission group control block
120(78) CABEXTA Address of CAB extension
124(7C) CABCHAIN Address of the next CAB (0=last CAB)

*Indicates that a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) CABCND	Byte 0	Channel condition flags
	1...	Attention status required.
	.1..	Attention delay active.
	..1.	Monitoring suppress out
	...1	Channel monitor mode active.
	1...	Attention has been presented.
	.1..	Sense command flag.
	..1.	CA slow down flag.
	...1	3725 not initialized over this CA.
	Byte 1	
	1...	Host can write bit.
	.1..	Channel adapter CWALL exit.
	..1.	Buffer event outstanding.
	...1	Abort requested by level 4.
	1...	Abort recognized (type 1/4 CA).
	.1..	Abort pending.
	.... ..x.	Reserved.
	1	Channel inoperative.
26(1A) CABSEL		Channel adapter selection mask.
	X'0000'	CA position 1 selected.
	X'0200'	CA position 2 selected.
	X'0400'	CA position 3 selected.
	X'0600'	CA position 4 selected.
	X'0800'	CA position 5 selected.
	X'0A00'	CA position 6 selected.
30(1E) CABCCMD	Byte 0	Initial selection subchannel address.
	Byte 1	Current channel command
	X'00'	Test I/O
	X'01'	Write
	X'02'	Read
	X'03'	NO-OP
	X'04'	Sense
	X'05'	Write IPL
	X'09'	Write Break.
	X'31'	Write Start 0.
	X'32'	Read Start 0.
	X'51'	Write Start 1.
	X'52'	Read Start 1.
	X'61'	Write XID.
	X'62'	Read XID.
	X'93'	Restart Reset.
	X'A3'	Discontact
	X'C3'	Contact
	X'E4'	Sense I/O

Offset/Field Name	Bit Pattern/ Hex Value	Contents
32(20) CABSTAT	Byte 1 1. . . . . . .1 . . . . . . .1 . . . . .1 . . . . 1. . . . . . . .1 . . . . .1 1	Current status byte. Attention Status mod. Control unit end. Busy. Channel end. Device end. Unit check. Unit exception
34(22) CABSTATE	 1. . . . . . .1 . . . . 1. 1	Buffer information. Last buffer in PIU. End of host buffer unit. Needs suppressible status. Sense I/O command flag.
35(23) CABTRCF	 X'00' X'FF'	CA trace flag. No trace function. Trace function activated.
38(26) CABSENSE	 1. . . . . . .1 . . . . . . .1 . . . . .1 . . . . 1. . . . . . . .1 . . . . .1 1	Sense byte to transfer for sense command. Command reject. Intervention required. Bus out check. Equipment check. Data check. Overrun. Not initialized. Program abort.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
84(54)		
CABCONFG	Byte 0	System Configuration 1
	1...	Abend.
	.1..	Attention time-out.
	..1.	Attention delay.
	...1	Status modifier.
	.... 1...	Reserved.
	.... .1..	Channel adapter trace.
	.... ..1.	Reserved.
	1	PEP.
	Channel adapter type from the BUILD macro NCPCA operand.	
	Byte 1	
	xxxx	Type of active single CA.**
	 xxxx	Type of inactive CA.***
	Byte 2	
	xxxx	Type of inactive CA.***
	 xxxx	Type of inactive CA.***
	Byte 3	
	xxxx	Type of inactive CA.***
	 xxxx	Type of inactive CA.***
	Channel adapter type physically installed by position where xxxx=0101. (From BUILD macro CA operand.)	
	Byte 4	
	xxxx	CA position 1.
	 xxxx	CA position 2.
	Byte 5	
	xxxx	CA position 3.
	 xxxx	CA position 4.
	Byte 6	
	xxxx	CA position 5.
	 xxxx	CA position 6.
	Active/inactive status of CA by position. (From BUILD macro NCPCA operand.)	
	1...	Active CA position 1.
	.1..	Active CA position 2.
	..1.	Active CA position 3.
	...1	Active CA position 4.
	.... 1...	Active CA position 5.
	.... .1..	Active CA position 6.

**Indicates the type of active CA only when the system is NCP generated for a single active CA (xxxx=0101); otherwise, xxxx=0000.

***When the system is NCP generated for a single active CA, the type for the remaining inactive CAs is indicated by xxxx=0101; otherwise, xxxx=0000.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
108(6C) CABTRCFE		CA trace field.
	X...	1=CA trace still on after initialization. 0=CA trace has been turned off after initialization.
	.1..	CA trace—recurrent entry.
114(72) CABCNTL	Byte 0	Channel Adapter Contact Control flags.
	1...	SSCP XID expected.
	.1..	Read XID command expected.
	..1.	Read of NCP's XID pending.
	...1	Contact command expected.
	.... 1...	FID4 contacted mode.
	.... .1..	FID1 contacted mode.
	.... ..1.	ANS-completed PIU on channel intermediate queue.
	1	2-second channel ERP control.

CHANNEL ADAPTER CONTROL BLOCK (Extension) CAB (Ext)

Program: NCP

Size in bytes: 128(80)

Pointer to: CABEXTA of CAB (main).

Function: Contains parameters and control fields used by the channel adapter I/O supervisor. This block is an extension of the channel control block (CAB).

Index

Name	Offset	Name	Offset	Name	Offset
CABACNT	64(40)	CABIPBF	20(14)	CABOXSV	72(48)
CABBALR	58(3A)	CABIPIUA	16(10)	CABO62RB	114(72)
CABBCNT	66(42)	CABIQBS	68(44)	CABPAD	112(70)
CABCPIUN	28(1C)	CABIQH	0(0)	CABPFAD	116(74)
CABCPIU1	24(18)	CABIQT	4(4)	CABPIUCT	32(20)
CABDPEPF	116(74)	CABMAINA	124(7C)	CABRCCW	92(5C)
CABDUMBF	108(6C)	CABMDO	48(30)	CABRDCNT	92(5C)
CABFCCW	100(64)	CABMLCNT	38(26)	CABRHAC	98(62)
CABFHAC	96(60)	CABOBUFA	84(54)	CABROTSV	76(4C)
CABHQH	8(8)	CABODATA	88(58)	CABSKPCT	34(22)
CABHQT	12(C)	CABOPIUA	80(50)	CABSKPIU	36(24)
CABIBUFA	40(28)	CABOUTR	56(38)	CABXCNT	104(68)
CABIDATA	44(2C)	CABOXCNT	94(5E)	CABYCNT	106(6A)

CABIQ
Channel Intermediate Queue

0(0)	CABIQH Intermediate queue head pointer (Blocks to be transmitted)
4(4)	CABIQT Intermediate queue foot pointer (Blocks to be transmitted)

CABHQ
Channel Hold Queue

8(8)	CABHQH Hold queue head pointer (Blocks that have transmitted)
12(C)	CABHQT Hold queue foot pointer (Blocks that have transmitted)

Inbound Transfer Information
(Host Write/Write Break)

16(10)	CABIPIUA Address of first input buffer in PIU
20(14)	CABIPBF Address of previous current buffer
24(18)	CABCPIU1 Address of the first buffer of last PIU passed to path control
28(1C)	CABCPIUN Address of the last buffer to pass to path control

32(20) CABPIUCT Number of PIUs passed to path control on the last write sequence.	34(22) CABSKPCT Number of PIUs to skip for retry	
36(24) CABSKPIU Number of PIUs skipped	38(26) CABMLCNT SSCP buffer lease count for input data. (INBFRS parameter)	39(27) Reserved
40(28) CABIBUFA Address of current buffer received over channel.		
44(2C) CABIDATA Address of current inbound data received over channel		
48(30) CABMDO Maximum data count at the current input buffer	50(32) Reserved	
52(34) Reserved		
56(38) CABOUTR Pre-defined Out X'3m' where m is value 0 through 5 depending upon the CA address.	58(3A) CABBALR Predefined return.	
60(3C) Reserved		
64(40) CABACNT Inbound VRPRS count	66(42) CABBCNT Outbound end bit count	

Outbound Transfer Information (Host Read)

68(44) CABIQBS Address of last output block given to CXCAOUT from path control
72(48) CABOXSV Save area for the output transfer routine
76(4C) CABROTSV Refresh the output transfer save area

80(50) CABOPIUA Address of output (to the channel) PIU.	
84(54) CABOBUFA Address of output (to the channel) buffer.	
88(58) CABODATA Address of output (to the channel) data.	
92(5C) CABRDCNT Output buffer residual data count --- CABRCCW Number of host read CCWs	94(5E) CABOXCNT Bytes in next output data service
96(60) CABFHAC Host read buffer size (UNITSZ parameter)	98(62) CABRHAC Host read residual byte count (UNITSZ parameter)
100(64) CABFCCW Number of host read CCWs (MAXBFRU parameter)	102(66) Reserved
104(68) CABXCNT Inbound VRPRQ count	106(6A) CABYCNT Inbound end bit count

Host Buffer Pad Support

108(6C) CABDUMBF Address of dummy data buffer	
112(70) CABPAD Pad size as control field (BFRPAD parameter)	113(71) Reserved

PEP Option Interface Area

	114(72) CABO62RB Output register X'2' reset/request save area
116(74) CABDPEPF Dummy PEP flag	CABPFAD Address of PEPFLAG in PEP channel adapter control block or programmed resource channel adapter UACB.

CAB Extension Chain Field Area

120(78) Reserved
124(7C) CABMAINA Address of main control block for this extension

CHANNEL ADAPTER INITIALIZATION TABLE — CAI

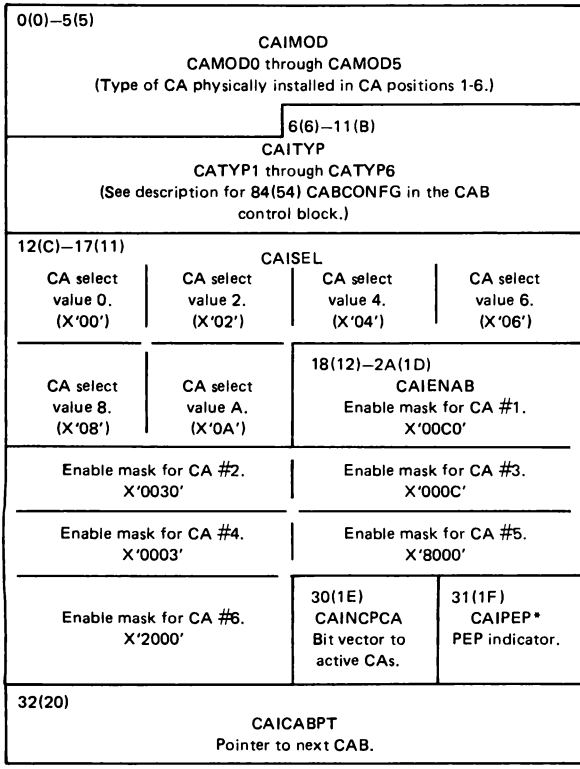
Program: NCP

Size in bytes: 36(24)

Created by: NCP generation.

Pointer to CAI: Load Address of CXTCAI

Function: Contains values used in initializing the channel adapter. Labels CAIMOD, CAITYP, CAINCPCA, and CAIPEP contain values as punched from stage 1 of NCP generation.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
31(1F) CAIPEP	 X'00' X'01'	PEP indicator NCP PEP

CHANNEL ADAPTER TRACE SELECT TABLE CAT

Program: NCP

Size in bytes: 28(1C)

Created by: NCP generation.

Pointer to CAT: Link edit map

Function: When the CA selection mask (CAT) matches the CABSEL mask (CAB), the CA trace console function can turn the CA trace on or off for the selected CA. The table contains seven full words; one for each of the six possible channel adapter positions and one to indicate the end of the table. NCP generation sets the initialized values and they are not changed.

0(0) CATEOT* End-of-table indicator	1(1) CATCAPOS* CA position indicator	2(2) CATSELM* CA selection mask.

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CATEOT		End-of-table indicator.
	X'00'	Not end of table
	X'FF'	End of table
1(1) CATCAPOS		CA position indicator.
	X'20'	CA position 6
	X'10'	CA position 5
	X'08'	CA position 4
	X'04'	CA position 3
	X'02'	CA position 2
	X'01'	CA position 1
2(2) CATSELM		CA selection mask
	X'0A00'	CA position 6
	X'0800'	CA position 5
	X'0600'	CA position 4
	X'0400'	CA position 3
	X'0200'	CA position 2
	X'0000'	CA position 1

COMMITTED BUFFERS BLOCK — CBB

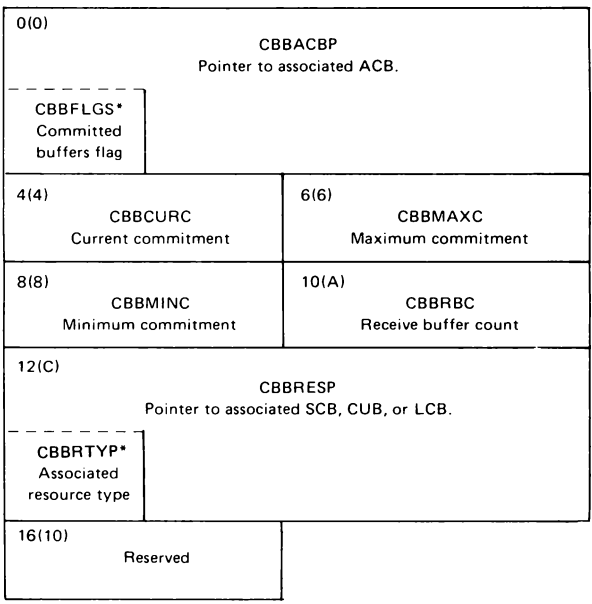
Program: NCP

Size in bytes: 18(12)

Created by: NCP generation.

Pointer to CBB: LCBCBBP field in the LCB; SCBCBBP field in the SCB and CUBCBBP field in the CUB.

Function: Maintains buffer commitment status on SDLC stations and BSC/SS lines.



*Indicates that byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CBBFLGS	x. . .	Type request 1 = No poll. 0 = Poll requested.
12(C) CBBRTYP	 X'80' X'60' X'40'	Resource type BSC or SS line control. PU type 1 or 2. PU type 4.

CHARACTER CONTROL BLOCK

CCB
(EP, PEP)

Program: EP, PEP

Size in bytes: Variable depending upon the extensions added.

Located: $LVL2 (PEP) or CYKEPCCB (EP)

Created by: NCP or EP generation.

Pointer to CCB: LNVT

Function: Contains current information on the physical operation of a line. One CCB is generated for each line specified.

Index

Name	Offset	Name	Offset	Name	Offset
CCBACADR	72(48)	CCBDS62	88(58)	CCBL1CAF	63(3F)
CCBBBUF	104(68)	CCBDYLNP	100(64)	CCBL1CSP	62(3E)
CCBBCC	104(68)	CCBDYPTR	96(60)	CCBL1FLG	62(3E)
CCBBCC1	104(68)	CCBDYTLN	104(68)	CCBL1SEN	61(3D)
CCBBCC2	104(69)	CCBDYTYP	96(60)	CCBL1STA	60(3C)
CCBBCNT	98(62)	CCBEBUFF	108(6C)	CCBL1STN	60(3C)
CCBBUFSZ	111(6F)	CCBEOT	99(63)	CCBL2	36(24)
CCBCAB	110(6E)	CCBFLGB1	96(60)	CCBL2A1	100(64)
CCBCAC	68(44)	CCBFLGB2	97(61)	CCBL2NCA	40(28)
CCBCFLG	57(39)	CCBFLG1	96(60)	CCBL2PTR	40(28)
CCBCHADR	34(22)	CCBFLG2	97(61)	CCBL3PTR	44(2C)
CCBCLOCK	70(46)	CCBGADR	107(6B)	CCBL3SCA	44(2C)
CCBCMD	64(40)	CCBHPCNT	99(63)	CCBMPIU1	100(64)
CCBCMREM	87(57)	CCBHPIU	108(6C)	CCBMPIU2	104(68)
CCBCSENS	67(43)	CCBLCD	77(4D)	CCBNQCNT	68(44)
CCBCSPA	89(59)	CCBLECS	65(41)	CCBOPIO	83(53)
CCBCSPIA	81(51)	CCBLGT	100(64)	CCBOPT	74(4A)
CCBCSTAT	66(42)	CCBLIADR	78(4E)	CCBOPT2	75(4B)
CCBDATA	40(28)	CCBLINK1	40(28)	CCBORGCM	86(56)
CCBDATA1	44(2C)	CCBLINK2	42(2A)	CCBPEPFL	33(21)
CCBDDFLG	80(50)	CCBLNTCL	92(5C)	CCBPNXTB	96(60)
CCBDLCOM	108(6C)	CCBLNVT	84(54)	CCBPRCNT	96(60)
CCBDSCUR	80(50)	CCBLRC	96(60)	CCBPTCCB	100(64)
CCBDSEND	88(58)	CCBLRI	65(41)	CCBRADR	44(2C)
CCBDSICT	108(6C)	CCBLSTAT	90(5A)	CCBSADR	106(6A)

Index

Normal Mode (High Level)

−(m+12) Buffer *

Set Mode Data for Normal Mode BSC Tributary

−12(−C) Disable time-out.		−10(−A) * Line control 1 parameters.	−9(−9) * Line control 2 parameters.
−8(−8) LCD and buffer prefix size.	−7(−7) * Line control 3 parameters.	−6(−6) EP buffer size.	−5(−5) Selection address.
−4(−4) Group selection address.	−3(−3) Poll address.	−2(−2) Reserved.	−1(−1) Reserved.

Set Mode Data for Other Than Normal Mode Tributary

−12(−C) Disable time-out.		−10(−A) * Line control 1 parameters.	−9(−9) * Line control 2 parameters
−8(−8) * LCD and buffer prefix size.	−7(−7) * Line control 3 parameters.	−6(−6) EP buffer size.	−5(−5) X'00'
−4(−4) X'00'	−3(−3) X'00'	−2(−2) X'00'	−1(−1) X'00'

*Indicates that a byte expansion follows.

Character Mode (BSC High Priority)

−32(−20) Buffer (20 bytes)
−12(−C) thru −1(−1) Set mode data. (See Normal Mode for format)

Character Mode (S/S High Priority)

−(n+12) Buffer*
−12(−C) thru −1(−1) Set mode data. (See Normal Mode for format)

Character Mode (Normal)

−12(−C) thru −1(−1) Set mode data. (See Normal Mode for format)

Scanner Interface Trace

−1024(−400) thru −1(−1) Buffer (1024 bytes)

*Indicates that a byte expansion follows.

CCB

PARAMETER STATUS AREA (PSA) (EP, PEP)

Common Parameter Area

0(0) PSATCC Trace correlation counter	1(1) PSAMOD* Command modifier	2(2) PSAOFSET Data area buffer offset	3(3) Reserved
4(4) PSAPBPTR Pointer to data area			
PSACNT Cycle steal character count	5(5) PSACHGST Change start	6(6) PSACHG1 Change byte 1	7(7) PSACHG2 Change byte 2
8(8) PSALID Line ID		10(A) PSARLID Receive line ID	
PSACHG3 Change byte 3	9(9) PSACHG4 Change byte 4		
12(C) Reserved			

Common Status Area

16(10) PSASSCF* Secondary control field	17(11) PSACCMD* Current command	18(12) PSASES* Secondary status	19(13) PSALCS* Line communication status.
20(14) PSARCNT Residual count	21(15) Reserved	22(16) PSAMDIN* Modem-in	23(17) PSAMDOUT* Modem-out
24(18) Reserved			

*Indicates that a byte expansion follows.

Character Mode Parameter Area

0(0) PSATCC Trace correlation counter.	1(1) PSAMOD* Command modifier.	2(2) PSAPSCF Secondary control field.	3(3) PSAPPDF Parallel data field.
4(4) PSAPPCF* Primary control field.	5(5) PSAPSDF Serial data field.	6(6) PSALQCNT Line quiesce count for Write ICW.	7(7) Reserved
8(8) Reserved			
12(C) Reserved			

Character Mode Status Area

16(10) PSASSCF* Secondary control field.	17(11) PSASPDF Parallel data field.	18(12) Reserved	19(13) PSALCS* Line communi-cation status.
20(14) PSASPCF** Primary control field.	21(15) PSASSDF Serial data field.	22(16) PSAMDIN* Modem-in	23(17) PSAMDOUT* Modem-out
24(18) Reserved			

* Indicates that a byte expansion follows.

** High-order 4 bits contain the high-order 4 bits of the CCBLCD field. (See the expansion of CCBLCD.) Low-order 4 bits contain the low-order 4 bits of the PSAPPCF field. (See the expansion of PSAPPCF.)

Trace Parameter Area

0(0) Reserved	1(1) PSAMOD* Command modifier.	2(2) PSAOFSET Data area buffer offset.	3(3) PSATMR Timer
4(4) PSACNT Cycle steal character count	PSAPBPTR Pointer to first buffer in chain.		
8(8) PSASLID TLNVT slot ID.		10(A) PSADCNT* Bytes of data to trace.	11(B) PSACSPIA Interface address to trace.
12(C) Reserved			

Trace Status Area

16(10) PSASSCF* Secondary control field.	17(11) PSACCMD* Current command.	18(12) PSASES* Secondary status.	19(13) PSALCS* Line communication status.
20(14) PSARCNT Residual count.	PSASBPTR Pointer to last buffer in chain		
24(18) Reserved	25(19) PSARTMR Residual timer.	26(1A) Reserved	

*Indicates that a byte expansion follows.

Wrap Parameter Area (Normal Mode)

0(0) PSATCC Trace correlation counter.	1(1) PSAMOD* Command modifier.	2(2) PSAOFSTT Transmit data area buffer offset.	3(3) PSAOFSTR Receive data area buffer offset.
4(4) PSAFTBPT First transmit buffer pointer (modem out).			
PSACNTT Transmit count.			
8(8) Reserved		10(A) PSARLID Receive line ID.	
12(C) PSAFRBPT First receive buffer pointer (modem in).			
PSACNTR Receive count.			

Wrap Status Area (Normal Mode)

16(10) PSASSCF* Secondary control field.	17(11) PSACCMD* Current command.	18(12) Reserved	19(13) PSALCS* Line communication status.
20(14) PSALRBPT Last receive buffer used pointer			
PSARCNT Residual count			
24(18) Reserved			

*Indicates that a byte expansion follows.

Wrap Parameter Area (Character Mode)

0(0) PSATCC Trace correlation counter.	1(1) PSAMOD* Command modifier.	2(2) Reserved
4(4) Reserved		
8(8) Reserved		10(A) PSARLID Receive line ID.
12(C) Reserved		

Wrap Status Area (Character Mode)

16(10) PSASSCF* Secondary control field.	17(11) PSACCMD* Current command.	18(12) Reserved	19(13) PSALCS* Line communication status.
20(14) PSASPCF** Primary control field.	21(15) PSASSDF Serial data field.	22(16) PSAMDIN* Modem-in	23(17) PSAMDOUT* Modem-out
24(18) Reserved			

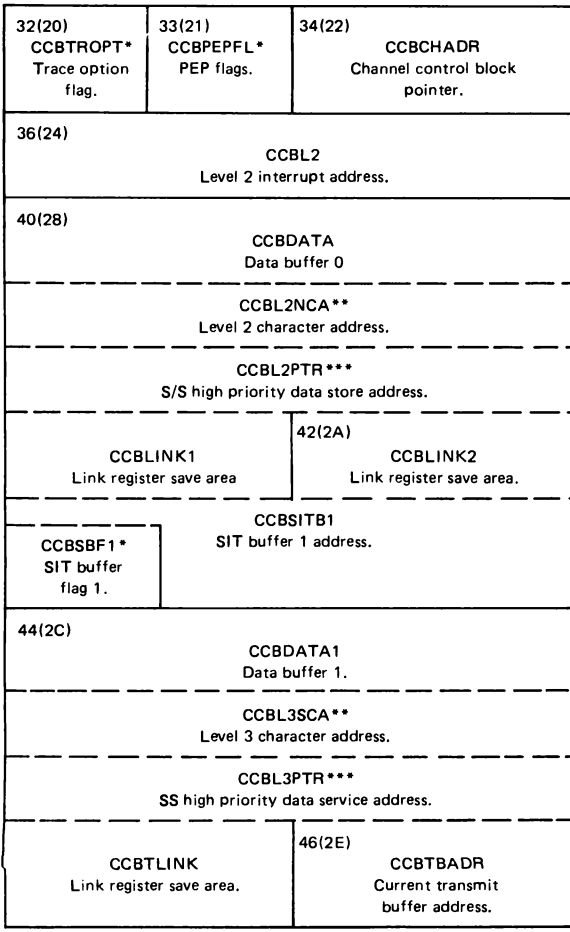
* Indicates that a byte expansion follows.

** High-order 4 bits contain the high-order 4 bits of the CCBLCD field. (See expansion of CCBLCD.)
Low-order 4 bits contain the low-order 4 bits of the PSAPPCF field. (See expansion of PSAPPCF.)

Common to All Modes

28(1C) CCBSPTR Pointer to the start of a CCB.

CCB Proper Common Area



*Indicates that a byte expansion follows.
**Character mode BSC priority lines only.
***Character mode S/S priority lines only.

44(2C) cont.			
CCBSBF2*** SIT buffer flag 2.	CCBSITB2 SIT buffer 2 address.		
CCBRADR MSLA unassigned CCB1.			
48(30) CCBSQC* Sense ID	CCBSVLNK Data service queue forward chain pointer.		
52(34) CCBTMFAC Timer Read command.	CCBSOLNK Status out queue forward chain pointer.		
56(38) CCBSUBCH Multiplexer sub-channel address.	57(39) CCBCFLG* Configuration flag.	58(3A) CCBSTAT* Final line status.	59(3B) CCBSENSE* Final line sense.
60(3C) CCBL1STN Level 1 status/sense.		62(3E) CCBL1FLG Level 1 error flags.	
CCBL1STA Status byte.	65(3D) CCBL1SEN Sense byte.	CCBL1CSP* CSP error flags.	63(3F) CCBL1CAF* CA error flags.
64(40) CCBCMD Current command for CCB (See Section 7.)	65(41) CCBLRI* Line request information.	66(42) CCBCSTAT** Current status.	67(43) CCBCSENS** Current sense.
Reserved	CCBLECS* Line error check/control byte	Reserved	

*Indicates that a byte expansion follows.
**For CCBCSTAT expansion, see CCBSTAT.
For CCBCSENS expansion, see CCBSENSE.
***For CCBSBF2 expansion see CCBSBF1.

68(44) CCBCAC* Character address counter.	69(45) CCBSVSTC* Service/status flag.	70(46) CCBCLOCK Timer control field.	71(47) CCBTMADR Time-out routine displacement into branch table.
CCBNQCNT Data service count.			
Reserved.	CCBTEST Line active byte for console test.	Reserved.	
72(48) CCBACADR Autocall address.		74(4A) CCBOPT* CCB option byte 1.	75(4B) CCBOPT2* CCB option byte 2.
76(4C) CCBSTMOD* Mode flag byte.	77(4D) CCBLCD* Line control definition	78(4E) CCBLIADR*** Line interface address (Low-order 9 bits).	
80(50) CCBTD IOH TD information.		82(52) CCBTA IOH TA information.	
CCBTDCMD* CSP command.	81(51) CCBCSPIA* CSP interface address.	CCBSLPAC* Encoded CSPA.	83(53) CCBOPIO* Type of I/O instruction.
CCBDDFLG* Dynadump flag.**	Reserved.		
CCBDSCUR** Dump storage current.			

*Indicates that a byte expansion follows.
**Used only by Dynadump.
***To compute the relative line number, divide by two.

84(54) CCBLNVT CCB line vector table address.		86(56) CCBTLNVT CCB trace line vector table address.	
Reserved		CCBORGCM** Dynadump orig. command.	87(57) CCBCMREM** Dynadump command remember
88(58) CCBDS62 D/S control	89(59) CCBCSPA* CSP address.	90(5A) CCBLSTAT* Line initialization state.	
CCBDSEND** Dump storage end.			
92(5C) CCBXPTR Pointer to general purpose extension. (CCBX)			
CCBLNTCL* Line test control.	93(5D) Reserved		

Start Stop Extension

96(60) CCBLRC SS longitudinal redundancy check.	97(61) CCBSSC* SS control flag.	98(62) CCBSSCX* SS control flag extension.	99(63) CCBHPCNT SS high priority buffer count.
100(64) CCBLGT Pointer to the start stop line group table.			
104(68) CCBSBUFF Start address of the start stop high-priority buffer.			
108(6C) CCBEBUFF End address of the start stop high-priority buffer.			

*Indicates that a byte expansion follows.
**Used only by Dynadump.

Binary Synchronous Extension (Character Mode)

96(60) CCBFLGB1* Flag byte 1 (status.)	97(61) CCBFLGB2* Flag byte 2 (terminal type.)	98(62) CCBSYN BSC EBCDIC or USASCII SYN character.	99(63) CCBEOT BSC EBCDIC or USASCII EOT character.
100(64) CCBL2A1 CCBL2 save area.			
104(68) CCBBCC BSC block check character		106(6A) Station select feature (optional)	
CCBBCC1 BSC block check character 1.	105(69) CCBBCC2 BSC block check character 2.	CCBSADR Poll or select address.	107(6B) CCBGADR Group selection address.
108(6C) CCBDLCOM Line address if Dual Communications Feature is installed (2701 emulation only).		110(6E) CCBTMDSR Data set ready control count.	111(6F) Reserved

Binary Synchronous Extension (Normal Mode)

96(60) CCBFLG1* Flag byte 1 (status.)	97(61) CCBFLG2* Flag byte 2 (terminal type.)	98(62) CCBBCNT Second buffer count.	99(63) CCBTCNT First buffer count.
100(64) CCBTBUF First cycle steal buffer address. or Pointer to ACU buffer.			
104(68) CCBBBUF Second cycle steal buffer address			

*Indicates that a byte expansion follows.

108(6C) CCBDLCOM Dual communications feature.	110(6E) CCBCAB* Channel adapter flags.	111(6F) CCBBUFSZ Buffer size or autocall dial digits.

Dynadump Extension 1

96(60) CCBDYTYP* Dynamic pointer type.	CCBDYPTR Pointer to dynamic CDDO.
100(64) CCBDYLNP Pointer to dynamic line trace.	
104(68) CCBDYTLN Dynamic TLNVT pointer.	106(6A) Reserved
108(6C) Reserved	

Dynadump Extension 2 (CSP/MOSS Dump)

96(60) CCBPRCNT PIU residual count.	CCBPNXTB Pointer to the next byte of the PIU.
100(64) CCBMPIU1 Pointer 1 to the MOSS PIU buffer.	
104(68) CCBMPIU2 Pointer 2 to the MOSS PIU buffer.	
108(6C) CCBDSICT DSI request count.	CCBHPIU Pointer to the host PIU buffer.

*Indicates that a byte expansion follows.

SIT Extension

96(60) CCBSCNT1 SIT count 1.	98(62) CCBSCNT2 SIT count 2.
100(64) CCBPTCCB Pointer to a real CCB.	
104(68) CCBSITFL* SIT flag	CCBSUTAD Scanner interface trace usage table (SUT) entry address.

*Indicates that a byte expansion follows.

Byte Expansions

Offset/ Field Name	Bit Pattern/ Hex Value	Contents	Applies to: BSC	Applies to: SS
−(m+12)		Length of buffer is determined at EP generation with the BUFSIZE operand of the GROUP or LINE macro. The m specifies the number of bytes to be defined for each of two buffers. The 8 bytes added to the offset are for set mode data. Valid values for m are 4 to 255. Length is −(2m+8).		
−10(−A)		Line control 1 parameter.		
	0...	Always 0 for EP/PEP.	X	X
	.1..	BSC tributary support on this normal mode line.	X	
	..1.	Line is in 270X emulation mode.	X	X
	...1	Auto answer on switched line.	X	
	.... xx.	ITB mode set bits Receive Operation 00—Check BCC; do not generate EIB. 01—Treat ITB as data 1x—Check BCC; generate EIB after ITB, ETB, and ETX	X	

Offset/ Field Name	Bit Pattern/ Hex Value	Contents	Applies to: BSC	Applies to: SS
		Transmit Operation 00—Compute BCC and send after ITB, ETB, and ETX. 01—Treat ITB as data. 1x—Compute BCC and send after ITB, ETB, and ETX. Do not skip character after ITB.		
	.... ..1.	Data Set Ready permanently active.	X	X
	1	2703 emulation	X	X
−9(−9)		Line control 2 parameters.		
	1...	Generate answer tone/TWX.	X	X
	.1..	Switched line.	X	X
	..1.	Ring indicator mode.	X	X
	...1	Secure line.		X
	.... 1...	Turnaround with RTS on (duplex line).	X	X
	.... .1..	Transmit with New Sync.	X	
	.... ..1.	Ignore bad pad.	X	
	1	Swift support.	X	
−8(−8)		LCD and buffer prefix size.		
	xxxx	Line control definer field (see CCBLCD bits 0-3 for expansion).	X	X
	 xxxx	Buffer prefix size (X'0' thru X'F'; normally X'8').		

Offset/ Field Name	Bit Pattern/ Hex Value	Contents	Applies to: BSC	Applies to: SS
−7(−7)		Line control 3 parameters.		
SMDBYTES	1...	Synchronous line	X	
	.xxx x...	Line speed if 3725 supplies clock. Synchronous Line 0001=50 bps 0010=110 bps 0100=134.5 bps 0111=200 bps 1000=300 bps 1011=600 bps 1101=1200 bps 1110=Special (non standard). Start Stop Line 0000=50 bps 0011=110 bps 0101=134.5 bps 0110=200 bps 1001=300 bps 1010=600 bps 1100=1200 bps 1111-Special (non standard)	X	X
	.... .x..	Clocking. 1=Modem 0=3725	X	X
	.... ..x.	Modem data rate. 1=High 0=Low	X	X
	1	Medium speed local attach	X	X
−(n+12)		Length of buffer is determined at EP generation with the BUFETTE operand of the GROUP or LINE macro. The n specifies the number of 4-bytes buffers to be generated. The 8 bytes added to the offset are for set mode data. Length is −(4n+8).		

Offset/Field Name	Bit Pattern/ Hex Value	Contents
1(1) PSAMOD		Command modifier. Normal mode
	..1	Second transparent Write
	. . . . .1 . .	Data chain
	1	Line Dump (X'F5') command bit.
		Character mode
	1.	Set SCF and PDF
	.1	Set SDF
	..1	Set PCF
	. . . . .1 . .	Character delay
	. . . . . .1 .	Set SCF
	1	CCU L2 interrupt required
		Wrap
	. . . . x. . .	Wrap type 0 = Data wrap 1 = Control leads wrap
	. . . . .x . .	Wrap level 0 = LIC (internal) 1 = External
	. . . . . .x .	External level type 0 = Cable 1 = Modem
		Trace
	1.	Not NCP buffer
	.x	SIT mode—start trace on 1 = Duplex line. 0 = Half-duplex line.
4(4) PSAPPCF		Primary control field BSC
	X'00'	NO-OP
	X'04'	Monitor phase DSR check off.
	X'05'	Monitor phase DSR check on.
	X'07'	Receive in phase.
	X'08'	Transmit initial.
	X'09'	Transmit normal.
	X'0A'	Transmit normal with new sync.
	X'0C'	Transmit turn—RTS off.
	X'0D'	Transmit turn—RTS on.
		Start stop
	X'00'	NO—OP
	X'07'	Receive
	X'08'	Transmit initial
	X'09'	Transmit normal
	X'0A'	Transmit break

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) PSAPPCF (continued)	X'0B' X'0D' X'0E' X'0F'	Transmit turn—RTS off Transmit turn—RTS on Transmit initial and turn (Not used). Transmit initial and turn—RTS on (Not used).
7(7) PSACCNT	 1... .... .1.. .... ..1. ....x xxxx	Secondary control field extension & character count Perform end-of-reception (EOR) checking. Multiple pad flag. Perform receive break detection. Reserved. Character count field.
10(A) PSADCNT	 X'00' X'FF' X'nn'	Bytes of data to trace. No data to be traced. All data to be traced. nn bytes of data to be traced.
16(10) PSASSCF	 1... .... .1.. .... ..1. ....1 .... 1... .... .1.. ....1 1... .... .1.. .... ..1. ....1 .... 1... .... .1.. .... ..1. 1	Secondary control field. Normal mode Halt/abort. Service request. CSP under/overrun. Modem check. Data stored. EOM. RCV sequence. Secondary control field Character mode Stop bit check. Service request. Character overrun/underrun. Modem check. Receive line signal detect. Start bit detected. Program flag. Pad flag.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
17(11) PSACCMD		Current command. Normal Mode Commands
	X'20'	EP BSC Transmit Initial
	X'21'	EP BSC Transmit SYN
	X'22'	EP BSC Transmit Data
	X'23'	EP BSC Poll
	X'24'	EP BSC Receive
	X'25'	EP BSC Receive Continue
	X'26'	EP BSC Prepare
	X'27'	EP BSC Monitor for Phase
	X'28'	EP BSC Search
	X'29'	EP BSC Adprep
		Common Commands
	X'01'	Set-Mode
	X'02'	Enable
	X'03'	Disable
	X'04'	Monitor Incoming Call
	X'05'	Dial
	X'06'	Change
	X'08'	Raise DTR
	X'09'	Flush Data
	X'0B'	Reset–D
	X'0C'	Reset–N
	X'2C'	Start Trace
	X'2D'	Stop Trace
	X'2E'	Wrap
	X'F0'	Halt
	X'F5'	Line Dump
18(12) PSASES		Secondary status.
	.1	Format exception.
	. . . 1	Data check.
	. . . . . 1 . .	In phase.
19(13) PSALCS		Line communications status Initial Status
	X'80'	Special status.
	X'C0'	Internal box error.
	X'E0'	Hardware error.
		Special status (Initial status = 100)
	X'80'	Time out (nothing received).
	X'82'	End-of-reception (EOR) received (SS only).
	X'86'	LPDA test control active.
	X'88'	DLE–EOT disconnect sequence.
	X'8A'	Lost data.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
19(13) PSALCS (continued)	X'9A'	X21 connection not ready.
	X'9C'	Disconnected.
	X'9E'	Connected. Internal box error (Initial status = 110)
	X'C0'	AIO error.
	X'C2'	Adapter interface check.
	X'C4'	CSP interface error.
	X'C6'	FES failing to answer.
	X'C8'	FES internal error.
	X'CA'	LIC driver check/ICC int error.
	X'CC'	LIC interface error.
	X'CE'	LIC/ICC interface error.
	X'D0'	No interrupt from FES.
	X'D2'	Command rejected. Hardware error status (Initial status = 111)
	X'E2'	CTS dropped during command.
	X'E4'	DSR dropped during command.
	X'E6'	RLSD failed to drop on Disable command.
	X'F2'	CTS failed to come up.
	X'F4'	DSR failed to come up.
	X'F5'	Line Dump (X'F5') status.
	X'F6'	No cable installed (on Set Mode command).
	X'F8'	DSR/CTS failed to drop (on Disable command).
	X'FC'	Autocall check.
	X'FA'	Dial.
22(16) PSAMDIN		Modem—in.
	1...	Data set ready (DSR).
	.1..	Clear to send (CTS).
	..1.	Ring indicator (RI)
	...1	Receive line signal detector (RLSD).
	.... 1...	Test indicator (TI).
	.... .1..	Receive data (RVDT).
23(17) PSAMDOUT		Modem—out.
	1...	Data terminal ready (DTR).
	.1..	Request to send (RTS).
	..1.	New sync.
	...1	High data rate for modem.
	.... 1...	Modem test.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
32(20) CCBTROPT		Trace option flag.
	1.	SIT active.
	.1	SIT active odd interface.
	. .1	Trace active for level 2.
	. . .1 . . .	Trace active for level 2 odd.
	. . . . 1. . .	Trace active for level 3.
	. . . . .x . .	SIT remember—started on: 1 = Duplex line. 0 = Half-duplex line.
	. . . . . .1 .	Trace data option flag.
	x	Trace data option flag for odd. 0 = No data on line trace. 1 = Data on line trace.
33(21) CCBPEPFL		PEP flags.
	x.	0 = NCP ACB. 1 = EP CCB.
40(28) CCBSBF1		SIT buffer flag 1.
	1.	Buffer ready to be enqueued.
	.1	Buffer enqueued.
	. .1	CSP waiting on buffer.
48(30) CCBSQC		Sense ID.
	X'00'	Data count for sense data.
	X'03'	Data count for sense ID data.
57(39) CCBCFLG		Configuration flag.
	x.	Reserved.
	. .1	Start stop hi priority.
	. . . . x. . .	Reserved.
	. . . . .1 . .	Unhang active.
	. . . . . .1 .	Normal mode (hi-level).
	1	MSLA USCCB.
58(3A) CCBSTAT		Final line status.
	X'00'	Reset status byte.
	X'01'	Set UE.
	X'02'	Set UC.
	X'04'	Set DE.
	X'08'	Set CE.
	X'0C'	Set CE, DE.
	X'0D'	Set CE, DE, UE.
	X'0E'	Set CE, DE, UC.
	X'10'	Set CU busy.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
58(3A) CCBSTAT (continued)	X'20' X'40' X'4C' X'80'	Set control unit end. Set SM. Set CE, DE, SM. Set attention.
59(3B) CCBSENSE	 X'00' X'01' X'02' X'04' X'08' X'10' X'20' X'40' X'80'	Final line sense. Reset sense byte. Time out. Set lost data. Set overrun. Set data check. Set equipment check. Set bus out parity check. Set intervention required. Set command reject.
62(3E) CCBL1CSP	 1. . . . . . .1	Level 1 EP scanner error flags. EP L1 CSP error on data interface. EP L1 CSP error on ACU interface. (Bits 2 through 7 reserved).
63(3F) CCBL1CAF	 1. . . . . . . .1 . . . . .1	Level 1 EP CA error flags. EP L1 AIO error. EP L1 initial selection error. EP L1 data/status error. (Bits 1 and 4 through 7 reserved).
65(41) CCBLRI	 1. . . . . 1. . . . . . . .yxx	Line request information. Set interface disconnect flag. Set data end flag. y=Buffer (0 or 1). xx=Number of bytes requested from or presented to the channel.
CCBLECS	 1. . . . . . .1 . . . . .1 . . . . .1 . . . . 1. . . . . . . .1 . . . . .1 1	Line error check/control byte. (defined in CYKTST module) Interface disconnect flag. Data check indicator. Line is in transmit mode. Line is in receive mode. Prepare to transmit specified buffer. Prepare to transmit buffer 3. Prepare to transmit buffer 2. Prepare to transmit buffer 1.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
68(44)		Character address counter.
CCBCAC	X'07'	Reset CAC.
	.... 1...	Set BSC inhibit store flag.
69(45)		Service/status flag.
CCBSVSTC	1.....	Set data service (buffer 0).
	.1.....	Set data service (buffer 1).
	.... 1...	Set data end.
74(4A)		CCB option byte 1
CCBOPT	1.....	Auto call option installed.
	.1.....	Long disable time out.
	..x.....	Dualcom interface (BSC). 1=B 0=A
	...1....	Ring option installed.
	.... 1...	Switched line installed.
	.... .x..	Duplex line installed. 1=Duplex. 0=Half duplex.
	.....1.	Not unit exception on EOT (IBM SS)
	1	ACU CCB
75(4B)		CCB option byte 2.
CCBOPT2	1.....	Channel decode IBM type 1 and type 2 EOB.
	.1.....	Swift support (FEATURE= STXBSC).
	..1.....	Channel decode IBM type 3 ETX.
	...1....	2702 or 2703.
	.... 1...	S/S no DCD security monitor.
	.... .1..	World Trade telegraph.
	.....1.	Not long line quiet time-out.
	1	Option 1 modem.
76(4C)		Mode flag byte
CCBSTMOD		(Previously set mode byte)
	.1.....	Reset issued.
	..1.....	Data terminal ready.
	...1....	Binary sync clock.
	.... 1...	Modem clocking (external).
	.... .x..	Data rate select 1=High rate 0=Low rate
	.....1.	Inhibit reset of DTR.
	1	Poll entry too long.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
77(4D) CCBLCD		Line control definition
	X'00'	Start stop 9/6
	X'20'	Start stop 8/5
	X'30'	Autocall
	X'40'	Start stop 9/7
	X'50'	Start stop 10/7
	X'60'	Start stop 10/8
	X'70'	Start stop 11/8
	X'C0'	BSC EBCDIC
	X'D0'	BSC USASCII
	X'E0'	BSC USASCII transparent
80(50) CCBTDCMD		CSP command Normal mode
	X'25'	BSC Receive Continue.
		Character mode
	X'40'	Emulation Write ICW.
CCBDDFLG		Dynadump flag
	.1	Dynadump channel stop bit.
	. . . . 1. . .	CSP/MOSS dump in progress.
	. . . . .1 . .	Host PIU Read command pending.
	1	Level 1 ERP.
81(51) CCBCSPIA		CSP interface address
	000x xxxx	Last five bits of the line interface address.
82(52) CCBSLPAC		Encoded CSPA
	00xx 0. . .	Scanner (select). 01=First scanner. 10=Second scanner.
	. . . . 0xxx	LAB board (PAC) 000=LAB board 0. 001=LAB board 1. 010=LAB board 2. 011=LAB board 3. 100=LAB board 4. 101=LAB board 5. 110=LAB board 6. 111=LAB board 7.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
83(53) CCBOPIO		Type of I/O instruction.
		Normal mode
	X'00'	Start line.
		Character mode
	X'02'	Start line.
89(59) CCBCSPA		CSP address.
	 xxxx	First 4 bits of the line interface address.
90(5A) CCBLSTAT		Line initialization state.
	Byte 0	
	1...	Set mode in progress.
	.1..	Reset command in progress.
	..1.	Set mode required.
	...1	Reset command required.
	.... 1...	Line Dump (X'F5') command processing in progress.
	.... .1..	Postponed processing.
	.... ..1.	Bypass level 2 error handling.
	1	System reset occurred during Line Dump (X'F5') command.
	Byte 1	
	1...	Scanner disconnected.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
92(5C)		Line test control
CCBLNTCL	1.	Receive initiated by GROUP2.
	.1	Transparent mode.
	. . 1. . . .	Multiple buffer mode.
		(Bits 3 through 7 reserved).
96(60)		BSC flag byte 1 (status)
CCBFLGB1	1.	Channel priority.
	.1	EIB mode.
	. .1	Not new sync.
	. . .1 . . .	Interrupt mode.
	. . . . 1. . .	EIB data check.
	. . . . .1 . .	EIB overrun.
	. . . . . .1 .	Code B selected.
	1	ITB mode.
CCBDYTYP		Dynadump dynamic pointer type.
	X'00'	Scanner interface trace (SIT).
	X'01'	Line trace.
97(61)		Start stop control flag.
CCBSSC	000. . . .	TTY2 type line.
	001. . . .	2848 line.
	010. . . .	TTY1 type line.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
97(61) CCBSSC (continued)	100. . . . . 110. . . . . . . .1 . . . . 1. . . . . . . .1 . . . . .1 1	IBM type 1 line. IBM type 2 line. Bypass LRC (IBM types 1 or 2) or not upshift (TTY 1 or 2). Not immediate end (no line quiet pad check). Lower case remember. Not text in (IBM types 1 or 2) or not figs H (TTY type 2). Not text out (IBM types 1 or 2) or not first character (2848 or TTY).
CCBFLGB2		BSC flag byte 2 (terminal type).
	1.	Dualcom installed.
	.1	Station select installed.
	. .xx	Dual code mask.
	. . . . 1. . .	Transparent mode (wait for second write).
	. . . . .1 . .	Second write accepted.
	. . . . . .1 .	Multipoint address remember flag.
	1	No trailing pad check.
98(62) CCBSSCX	 xxxx	Start stop control flag extension. Stop bit error counter.
	. . . . .1 . .	Circle C received.
	. . . . . .1 .	Delay required.
	1	Half-duplex link on which break is allowed.
104(68) CCBSITFL	 1.	Scanner interface trace flag. Stop SIT pending.
	x	SIT interface 1=odd 0=even
110(6E) CCBCAB	 x.	Channel adapter flags. Sync monitor latch. 1=Sync character detected in inbound CA transfer. 0=Non-sync character detected in inbound data.
	.1	DLE remember latch.
	. .1	ASCII monitor control latch.
	. . .1	EBCDIC monitor control latch.

CHARACTER CONTROL BLOCK GENERAL PURPOSE EXTENSION

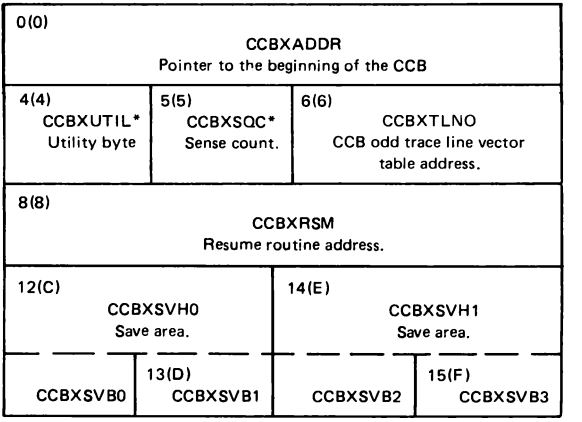
Program: EP, PEP

Size in bytes: 16(F)

Created by: EP and NCP generation.

Pointer to CCBX: CCBXPTR in CCB

Function: Contains current information on the physical operation of a line.



*Indicates that a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) CCBXUTIL		Utility byte
	.1	Wrap in progress.
	. .1	Console test in progress.
	1	CSP in wrap mode.
5(5) CCBXSQC		Sense count
	X'00'	Enqueued for sense data.
	X'03'	Enqueued for sense ID data.

CHARACTER CONTROL BLOCK (Line Test)

Program: EP, PEP

Size in bytes: 30(1E)

Located: $LVL2

Created by: NCP or EP generation.

Updated by: LCP, ICP.

Pointer to CCB: LNVT

Referenced by: LCP, ICP, CHVT.

Function: Contains current information on the physical operation of a line. Shows the revised format of the CCB while line test is active.

<table>
<tr><td colspan="4">0(0)
CCBDATA
Receive data buffer</td></tr>
<tr><td colspan="2">4(4)
CCBTLINK
Return link address save area</td><td colspan="2">6(6)
CCBTBADR
Transmit buffer address</td></tr>
<tr><td colspan="2">8(8)
CCBSVLNK
Data service queue forward chain pointer.</td><td colspan="2">10(A)
CCBSOLNK
Status out queue forward chain pointer.</td></tr>
<tr><td>12(C)
CCBSUBCH
Multiplexer sub-channel address.</td><td>13(D)
CCBCFLG**
Configuration flags</td><td>14(E)
CCBSTAT**
Final line status byte.</td><td>15(F)
CCBSENSE**
Final line sense byte.</td></tr>
</table>

**Refer to CCB (EP/PEP) for byte expansions.

16(10) CCBCMD Current command for CCB. (See Section 7.)	17(11) CCBLECS* Line Error Check.	18(12) CCBCSTAT*** Current status.	19(13) CCBCSENS*** Current sense
20)14) CCBCAC Buffer Index.	21(15) CCBTEST Active Test Function	22(16) CCBCLOCK Timer control field.	23(17) CCBTMADR Time-out routine displacement into branch table.
24(18) CCBACADR Auto-call address.		26(1A) CCBOPT** CCB option byte 1.	27(1B) CCBOPT2** Option byte 2.
28(1C) CCBSTMOD* Set mode byte	29(1D) CCBLCD* Line control definition (LCD) field. (High 4 bits contain line control definer; low 4 bits contain 0.)		

*Indicates that a byte expansion follows.
**Refer to CCB (EP/PEP) for byte expansions.
***For byte expansion of CCBCSTAT, refer to CCBSTAT in CCB (EP/PEP).
For byte expansion of CCBCSENS, refer to CCBSENSE in CCB (EP/PEP).

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
17(11) CCBLECS	1. . . .1. . ..1. ....1 .... 1... .... .1. . ...1. 1	Line error check Reserved for interface disconnect Data check Transmit mode Receive mode Normal compare set Swap 3 set Swap 2 set Swap 1 set

CHARACTER CONTROL BLOCK

CCB
(NCP)

Program: NCP

Size in bytes: 92(5C)

Created by: NCP generation.

Located in: ACB

Function: Contains line control information.

Index

Name	Offset	Name	Offset	Name	Offset
CCBAFLD	88(58)	CCBETBLT	90(5A)	CCBRSPON	82(52)
CCBAXBP	108(6C)	CCBFLAGS	64(40)	CCBRXLAT	68(44)
CCBBAR	48(30)	CCBFLAG1	94(5E)	CCBSEL	100(64)
CCBBCC	50(32)	CCBFSTSV	79(4F)	CCBSETYP	108(6C)
CCBBCC1	50(32)	CCBHDBUF	72(48)	CCBSMSDF	80(50)
CCBBCC2	51(33)	CCBICCCT	86(56)	CCBSSCB	96(60)
CCBBSCFL	89(59)	CCBLATO	92(5C)	CCBSSF	120(78)
CCBBUFCT	72(48)	CCBLCNT	89(59)	CCBSSF2	124(7C)
CCBCASE	51(33)	CCBLGPT	52(34)	CCBSTART	64(40)
CCBCBBP	120(78)	CCBLINK	104(68)	CCBSTATE	38(26)
CCBCFLD	89(59)	CCBLNRP	90(5A)	CCBSTAT1	56(38)
CCBCHAR	54(36)	CCBLPND1	86(56)	CCBSTAT2	71(47)
CCBCHNP	112(70)	CCBLQTC	93(5D)	CCBTACB	40(28)
CCBCMFL	112(70)	CCBLQTCC	92(5C)	CCBTIME	46(2E)
CCBCNTS	54(36)	CCBLRC	50(32)	CCBTOCMD	46(2E)
CCBCOMC	118(76)	CCBLTCRP	90(5A)	CCBTOREM	47(2F)
CCBCPCMD	96(60)	CCBL2	36(24)	CCBTRADR	98(62)
CCBCPCNT	68(44)	CCBL2REM	86(56)	CCBTWORK	44(22)
CCBCPOLL	100(64)	CCBL3	76(4C)	CCBTXLAT	70(46)
CCBCPRAT	69(45)	CCBMTASA	97(61)	CCBTYPE	83(53)
CCBCRC1	51(33)	CCBNCFL	94(5E)	CCBTYPEC	104(68)
CCBCRTN	88(58)	CCBNEGPD	87(57)	CCBVTABD	87(57)
CCBCRTNP	100(64)	CCBNEXT	71(47)	CCBXACBP	100(64)
CCBCTL	82(52)	CCBNTCRP	91(5B)	CCBXTICH	88(58)
CCBCUT	55(37)	CCBOFSET	95(5F)	CCBXTPCF	81(51)
CCBDATA	60(3C)	CCBPASCT	70(46)	CTBACB	40(28)
CCBEND1	58(3A)	CCBPOLL	96(60)	CTBWORK	44(2C)
CCBEND2	60(3C)	CCBPOLLI	91(5B)	LXBPOLL	96(60)
CCBERCNT	79(4F)	CCBPREC	116(74)	IOBPOLL	96(60)
CCBERTRY	78(4E)	CCBQCBP	124(7C)		
CCBESTAT	84(54)	CCBRACBP	96(60)		
CCBETBCT	92(5C)	CCBRBLUC	71(47)		

<table>
<tr><td>36(24) CCBL2
Address of current level 2 character service routine.</td><td>38(26) CCBSTATE*
Pointer to character service state address table. Initially, CCBSTATE contains the address of the beginning of the state address table. The masks shown in the byte expansion are used to set the low-order byte of CCBSTATE by the character service routines. They change the value of CCBSTATE so that it points to the entry in the state address table that contains the address of the routine to handle the line state indicated.</td></tr>
<tr><td colspan="2">40(28)
CCBTACB or
CTBACB
Pointer to the next ACB in the timer chain.</td></tr>
<tr><td>44(2C)
CCBTWORK or
CTBWORK
Timer work entry for this ACB.</td><td>46(2E)
CCBTIME*
Time-out interface.
CCBTOCMD Time-out command.
47(2F) CCBTOREM Time-out remembrance.</td></tr>
<tr><td>48(30)
CCBBAR
Pointer to LNVT entry. (backward pointer)</td><td>50(32)
CCBBCC
CRC check character (BSC). Frame check sequence (SDLC)
CCBBCC1 First BCC/CRC character.
CCBBCC2 CCBCRC1 Second BCC/CRC character.
CCBLRC LRC character (SS).
CCBCASE Shift-case history (SS).</td></tr>
<tr><td>52(34) CCBLGPT
Pointer to line group table (LGT) for group.</td><td>54(36) CCBCNTS
Character count/buffer count field.
CCBCHAR Buffer character count.
55(37) CCBCUT Buffer maximum for a receive operation.</td></tr>
</table>

*Indicates that a byte expansion follows.

56(38) CCBSTAT1* Current operational status of the line.	58(3A) CCBEND1*** Line status at completion of a level 2 operation. The level 2 routine moves the status from CCBSTAT1 to CCBEND1 at the end of an operation.

60(3C) CCBDATA** Address of the data byte being sent or received. (character mode)	
CCBEND2 Record descriptor flags moved from CCBSTAT2 at end of a level 2 operation.	

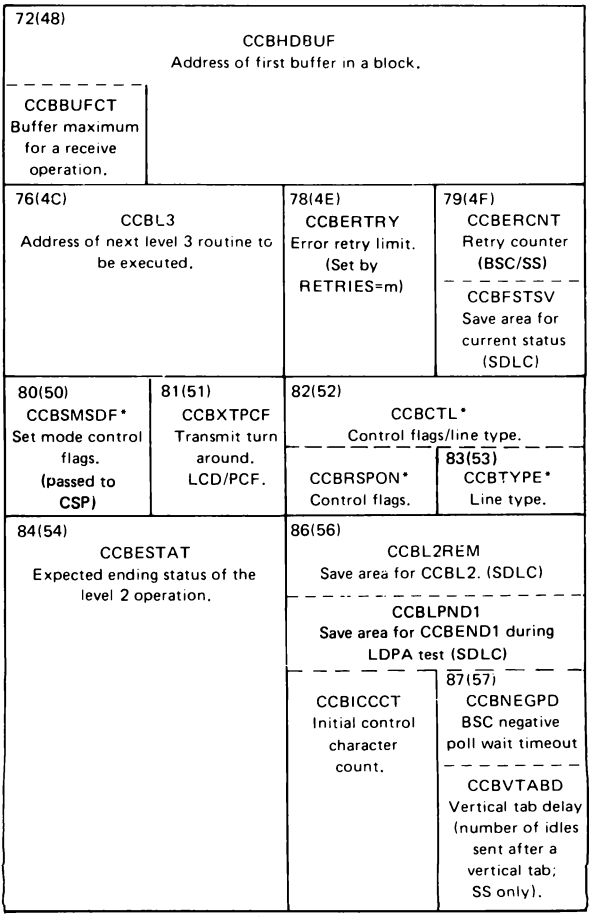
64(40) CCBFLAGS* General Flags	CCBSTART Current buffer address.

68(44) CCBRXLAT Address of receive translate decode table.		70(46) CCBTXLAT High-order byte of transmit translate decode table address. (The low-order byte of the address is the character to be translated.)	71(47) CCBSTAT2 Record descriptor flags. If any bit in this field is on, it indicates that the corresponding character was scanned.
CCBCPCNT Contact poll cycle count (SDLC)	69(45) CCBCPRAT Contact poll rate (SDLC).	CCBPASCT Pass counter-number of BLUs sent (SDLC).	CCBNEXT Buffer for next character to be transmitted. CCBRBLUC* BLU command field received for level 3 (SDLC).

*Indicates that a byte expansion follows.

**Normal mode receive—Address of one character beyond the last character received.
Normal mode transmit—Address of the next buffer in the write chain (zero if none)

***Level 3 translates status to ending format of LXBEXTST, LXBSTAT, and LXBSTATC of the Link XIO Control Block.



*Indicates that a byte expansion follows.

88(58) CCBCRTN Number of print positions carriage will return in time it takes to send one idle character (SS only).	89(59) CCBLCNT Length of print line (SS only).	90(5A) CCBLTCRP Number of data positions since last carriage return.	91(5B) CCBNTCRP Net carriage return value.
CCBAFLD Address field (Transmit/ Receive)	CCBCFLD Command field (Transmit/ Receive)(SDLC)	CCBLNRP* Last N(R) processed (SDLC).	CCBPOLLI Poll interval-maximum poll rate (SDLC)
CCBXTICH Character position of ITB mode transparent text (BSC only).	CCBBSCFL* Special flags (BSC only)	CCBETBLT Consecutive ETB limit (BSC 3270 only).	
92(5C) CCBLQTCC Line quiet test character count (SS)	93(5D) CCBLQTC Line quiet test interrupt counter (SS).	94(5E) CCBNCFL* Flags to control operations between IOB commands.	95(5F) CCBOFSET At start of a receive operation, set to the offset into the buffer of the first data character (SS/BSC only); after first character is received, set to 0, indicating that data was stored.
CCBLATO Link activity time-out (SDLC secondary)		CCBFLAG1* Flags for control of SDLC link with an active LXB command.	
CCBETBCT Valid ETB counter. (BSC 3270 only)			

*Indicates that a byte expansion follows.

96(60)

CCBPOLL

- Address of the entry in the service order table for the next station to be polled minus 2, used when the communications controller is the master station. CCBPOLL is equated to IOBPOLL.
- Pointer to current SOT entry being polled. (Half-duplex and duplex receive leg, primary stations only). CCBPOLL is equated to LXBPOLL.

CCBRACBP
Pointer to receive leg of a duplex link.
(transmit leg only)

CCBSSCB Service seeking control byte.	97(61) CCBMTASA MTA 1050 station address byte.	98(62) CCBTRADR Station select address for the communications controller when it is a tributary station.
CCBCPCMD Contact poll command executed.		

100(64)

CCBSEL

- Address of the station to be selected by the communication controller. CCBSEL is equated to IOBSEL.
- Output SOT pointer: pointer to current station that I-format data was sent to (primary stations only). CCBSEL is equated to LXBSEL.

CCBXACBP
Pointer to transmit leg of a
duplex link (receive leg only).

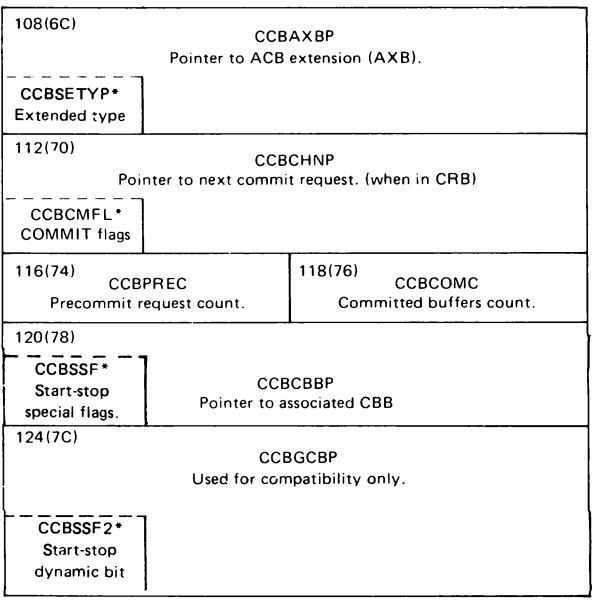
CCBCRTNP Carriage position.	101(65) Reserved	
CCBCPOLL Value multiplied by 4 is contact poll offset into SOT.		

104(68)

CCBLINK
Next ACB in level 2/3 chain.

CCBTYPEC*
Dial control flags.

*Indicates that a byte expansion follows.



*Indicates that a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
38(26) CCBSTATE		Pointer to character service state address table.
	State masks used by BSC character service	
	X'00'	Receive not text.
	X'02'	Receive phase.
	X'04'	Receive BCC.
	X'06'	Receive first not text.
	X'08'	Receive end pad.
	X'0A'	Queue received sub-block.
	X'0C'	Receive text.
	X'0E'	Receive intermediate BCC.
	X'10'	Transmit not text.
	X'14'	Transmit BCC.
	X'16'	Transmit syn insertion.
	X'18'	Transmit end pad.
	X'1A'	Transmit initial.
	X'1C'	Transmit text.
	X'1E'	Transmit intermediate BCC.
	X'20'	Receive idle.
	X'22'	Receive enable.
	X'24'	Receive DLE in text.
	X'26'	Receive disconnect.
	X'28'	Receive DLE in not text.
	X'28'	Transmit DLE in not text.
	X'2A'	Receive transparent text.
	X'2C'	Receive first transparent text.
	X'2E'	Receive DLE in transparent text.
	X'30'	Transmit Diagnostic.
	X'32'	Transmit Dial.
	X'34'	Transmit DLE in text.
	X'36'	Transmit syn insert-transparent.
	X'3A'	Transmit transparent text.
	X'3C'	Transmit first transparent text.
	X'3E'	Transmit DLE in transparent text.
	State masks used by start-stop character service	
	X'00'	Receive control.
	X'02'	Receive lost data.
	X'04'	Receive LRC.
	X'06'	Receive response.
	X'0E'	Line turnaround.
	X'10'	Transmit control w/repetition.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	X'12'	Transmit pad.
	X'14'	Transmit LRC.
	X'16'	Transmit reply.
	X'1A'	Transmit control w/address.
	X'1E'	Line turnaround.
	X'24'	Receive first character, MTA.
	X'28'	Receive post sense byte.
	X'2A'	Post the ACB queue.
	X'2C'	Receive line quiet test (1).
	X'2E'	Receive line quiet test (2).
	X'32'	Receive line quiet test (3).
	X'34'	Transmit carriage idles.
	X'36'	Transmit 1030 text idles.
	X'38'	Transmit reset pad flag.
	X'3C'	Transmit sub-block end.
	X'3E'	Transmit break.
	State masks used by SDLC character service	
	X'00'	RCV idle.
	X'0E'	Shoulder tap time-out.
	X'1E'	Shoulder tap time-out.
	X'20'	RCV idle.
	X'22'	Enable.
	X'26'	Disconnect.
	X'2E'	Shoulder tap time-out.
	X'3E'	Shoulder tap time-out.
	State bits and definitions	
	X'20'	DLE mask. 1=DLE encountered. 0=No DLE encountered.
	X'10'	Transmit/Receive mask. 1=Transmit. 0=Receive.
	X'04'	CTL or text out test mask. 1=SS state is receive reply. 0=SS state is receive control.
	X'02'	Send EOA mask. 1=Send pad in place of EOA. 0=Send EOA.
	X'01'	First flag mask. 1=First non SYN or DLE. 0=No first non SYN or DLE.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
46(2E) CCBTIME	The bits in position 0 of both bytes of CCBTIME are used together for time-out control. When these bits have different values in the 2 bytes of CCBTIME, a new timer command is present.	Time-out interface.
56(38) CCBSTAT1	Byte 0	Current operational status of line.
		Exceptional ending flags passed between levels 2 and 3.
	1...	Character overrun/underrun.
	.1..	Format error (abnormal) line control sequence for a receive operation).
	..1.	Stop bit error (start-stop only). Abort frame (SDLC). Seven ones in a row have been received.
	...1	Data check (VRC, LRC, or CRC error). SDLC flags received.
	1...	Block overrun occurred (SDLC). End pad failure (BSC point to point).
		Line quiet time-out (SS only).
	.1..	Reset command in process.
	..1.	Invalid DLE sequence (BSC only). or DCE clear indication detected (X.21 switched lines only).
	...1	Transmit length check. (BSC/SS)
	Byte 1	Completion codes indicating how the I/O operation ended. Status masks are the same as those for IOBSTAT+1 (BSC/SS lines) or LXBSTATC (SDLC links).

Offset/Field Name	Bit Pattern/ Hex Value	Contents
64(40)		General flags.
CCBFLAGS	1.	Tab preceded CR/LF (SS), or No time-out (BSC), or Initial time-out interval (SDLC).
	.x	Control mode indication. 1=Control mode is response to text, or Monitor mode in effect (SS), or NCP polled or selected (BSC), or Enable/Dial abort when level 2 ends. 0=Control mode if from polling or addressing, or Monitor mode not in effect (SS), or NCP not polled or selected (BSC), or Normal Enable/Dial abort.
	..1	Post ACB to the queue after turnaround.
	...1 . . .	One character of break signal received (SS). Next event is ITB (BSC).
	. . . . 1. . .	Line is in diagnostic mode.
	. . . . .1 . .	Wrap test in progress.
	. . . . . .1 .	Panel line test active.
	1	Line is disabled.
71(47)		Received C Field – BLU SDLC
CCBRBLUC	RRRP SSSO	I format.
	RRRP 0001	S format RR command/response.
	RRRP 0101	S format RNR command/response.
	RRRP 1001	S format REJ command/response.
	1001 0011	NS format SNRM command.
	0101 0011	NS format DISC command.
	0001 0111	NS format SIM command.
	1111 0011	NS format Test command.
	1011 1111	NS format XID command.
	0111 0011	**NS format UA response. (old NSA)**
	0001 0111	**NS format RIM response. (old RQI)**
	0001 1111	**NS format DM response. (old ROL)**
	1001 0111	**NS format FRMR response. (old CMDR)**
	0101 0011	**NS format RD response. (old RQD)**
	0000 1000	LPDA command/response.
	P=Poll/Final	1=Poll (command). Final (response).
	RRRR=N(R)	Recv seq count.
	SSS=N(S)	Send seq count.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
80(50)		Set mode control flags.
CCBSMSDF	x.	1=Synchronous line—normal mode. 0=Start-stop line.
	.xxx x. . .	Line speed—3725 clocking Synchronous line 0001= 50 bps 0010= 110 0100= 134.5 0111= 200 1000= 300 1011= 600 1101=1200 1110=Special Start-stop line 0000= 50 bps 0011= 110 0101= 134.5 0110= 200 1001= 300 1010= 600 1100=1200 1111=Special
	. . . . .x . .	1=Modem clocking. 0=3725 clocking.
	. . . . . .x .	Data rate select bit (World Trade modems) 1=High speed. 0=Low speed.
	1	Local attachment—no modem.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
82(52) CCBCTL CCBRSPON	Byte 0	Control flags/Line type. Control flags.
	Control Flag Definitions for Wrap	
	.... .1..	Transmit leg has not received L2 interrupt.
	.... ..1.	Receive leg has not received L2 interrupt.
	Control Flag Definitions for Replies	
	1...	Send NAK reply/delay after autodial.
	.1..	Send ACK reply.
	..x.	Alternating ACK bit for BSC (valid only if bit 1 is also on). 1=Send ACK1. 0=Send ACK0.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	...1	Last text reply was WACK (BSC), or TTD received when ACK outstanding, or Last reply outstanding (SS).
	.... x...	Expected receive alternate ACK bit (BSC). 1=ACK1 expected reply. 0=ACK0 expected reply.
	Control Flag Definitions for Polling Operations	
	x...	SDLC poll wait 1=Wait 0=No wait or Service-seeking skip bit. 1=Terminate if at end of service order table. 0=Continue service seeking.
	.1..	SDLC transmit leg busy.
	..1.	BSC/SS service-seeking polling, or BSC/SS single-poll, or SDLC SOT poll pointer not incremented this pass.
	...1	Service-seeking, or Orderly link stop bit level 3 1=End Run when both transmit and receive legs idle. (SDLC) 0=Continue Run command execution.
	.... x...	SDLC receive leg busy. 1=Cannot poll now (primary). (Always on if secondary.) 0=Can poll now.
	.xx.	Phase bits for SDLC operations: B'00'=No command active. B'01'=SDLC-format sent or SDLC RR-sent. B'10'=SDLC RNR-sent. B'11'=SDLC NS-command sent.
	x	SDLC *poll loop control* 1=At end of list no active station found 0=Active station found in list

Offset/Field Name	Bit Pattern/ Hex Value	Contents
		Control Flag Definitions for Enable/Dial Operations
	1...	Abort enable dial.
	.1..	Abort when level 2 processing ends.
	..x.	Duplex enable second pass through ender (SDLC). 1=Second pass through enable end. 0=First pass through enable end.
	...1	Send ENQ after ID. (Bits 4 and 5 reserved)
	.... ..1.	Dial pending.
	1	Connection pending.
		Control Flag Definitions for Text Operations
	1...	Insert data before text. (Bits 1-7 reserved.)
		Control Flag Definitions for Multiple Terminal Access
	1...	MTA retry in process.
	.x..	MTA 3767/2741 bit 1=Tested for 3767 0=Tested for 2741
	..1.	MTA 2741 retry in progress. (Bit 3 reserved)
	1...	MTA line enabled.
	.xx.	Phase bits: B'00'=Idle. B'01'=Receive text. B'10'=Receive text reply. B'11'=Receive control. or Special phase bits for ID exchange: B'00'=No command active. B'01'=Receive ID phase. B'10'=Receive ID reply. B'11'=Connect and Command Reject. or SDLC operations: B'00'=No command active. B'01'=RR sent or I-format sent. B'10'=RNR sent. B'11'=NS command sent. or

Offset/Field Name	Bit Pattern/ Hex Value	Contents
82(52) CCBCTL CCBRSPON (continued)		or Level 2 interrupts received by MOSS Wrap command. B'XX'=Set to expect level 2 interrupts from: 10=Transmit leg only 11=Transmit and receive legs B'0.'=Resets bit 5 for transmit leg B'.0'=Resets bit 6 for receive leg B'00'=Condition for PCI L3
	.....x.	1=Leading graphics being sent (BSC/SS). 0=Text being sent if transmitting.
	1	Sub-blocking occurred (BSC/SS). or No active SOT entries (SDLC).
83(53) CCBTYPE	Byte 1	Line Type
	1.....	Line is in normal mode.
	.x.....	Duplex adapter. 1=Line has 2 line adapter addresses. 0=1 line adapter address.
	..x.	Half duplex ACB or duplex transmit leg ACB. 1=Half duplex leg or duplex transmit leg ACB. 0=Duplex receive leg ACB. or Duplex adapter transmit leg ACB. 1=Transmit leg. 0=Receive leg.
	...1	Use data set new-sync feature (BSC/SDLC). Half-duplex link on which break is allowed (SS).
	.... x...	Line type bit (See note.) 1=BSC 0=Start-stop or SDLC (see bit 7).

Note: Bits 4 and 7 may have the following combinations:
0 . . 0=Start Stop
1 . . 0=BSC
0 . . 1=SDLC

Offset/Field Name	Bit Pattern/ Hex Value	Contents
83(53) CCBTYPE (continued)	.... .1..	Link-attached station can receive error message (BSC). or Time-out valid reply for negative poll (start-stop). or The station is currently a configurable station (SDLC).
	.... ..x.	Point-to-point contention bit (BSC/SDLC). 1=point-to-point contention secondary station (BSC). 0=point-to-point contention primary station (BSC). or 1=SDLC secondary station. 0=SDLC primary station.
	x	SDLC link bit (See note.) 1=Line type is SDLC (Bit 4=0). 0=Line type is not SDLC.
89(59) CCBBSCFL		Special flags—BSC only
	1...	Conversational Write
	.1..	ACK response to ACK flag.
90(5A) CCBLNRP	X'01'	Force N(R) processing on first response.
94(5E) CCBNCFL		Flags to control operations between IOB commands. (Bits 4, 5, and 7 are restricted to CCBFLAG1)
	1...	Command initialization delay required.
	.1..	Special ender procedure when no command is up.
	..1.	Send TTD bit.

Note: Bits 4 and 7 may have the following combinations:
0 . . 0 = Start Stop
1 . . 0 = BSC
0 . . 1 = SDLC

Offset/Field Name	Bit Pattern/ Hex Value	Contents
94(5E) CCBNCFL (continued)	...1	Send WACK.
	.....1.	Send EOT.
CCBFLAG1		Flags for control of SDLC link with an active LXB command. (Bits 0–3 and bit 6 are restricted to CCBNCFL)
	.... x...	Outstanding poll indicator (SDLC duplex line only). 1=Reply to poll is outstanding. 0=Final received in response to poll.
	.... .1..	Need update to CSP set mode data.
104(68) CCBTYPEC		Dial control flags.
	1...	Switched line.
	.1..	Line has auto-dial unit (switched only). or X.21 line has dial capability.
	..1.	Recognize ring indicator lead.
	.... x...	1=Generate answer tone after call-in. 0=Answer tone is automatic.
	.... .1..	Not NRZI mode (SDLC) or Monitor carrier on receive (SS)
	1	X.21 switched line.
108(6C) CCBSETYP		Extended type.
	1...	HDX send priority.
	.1..	High speed line.
	..1.	Link Problem Determination Aid (LPDA) test active.
	.... ..x.	1=User-written line control (UACB or GCB). 0=IBM-supported line control. Must be 0 in a CCB.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
112(70) CCBCMFL		COMMIT flags
	x.	1=Conditional type request. 0=CWALL type request.
	.1	Chain to CRB.
	..1	Poll type definition 1=RNR sent. 0=RR sent.
	. . .1	Duplex poll in progress.
	. . . . 1. . .	RNR exception state.
	. . . . .1 . .	COMMIT request satisfied.
	. . . . . .1 .	COMMIT in progress.
	1	DECOMMIT ALL operand requested.
120(78) CCBSSF		Start-stop special flags.
	. . .x	Immediate end on input. 1=End Read immediately on receiving the end character. 0=End Read after line quiesce.
		TWX Only
	xxx. . . .	Control of TWX receive parity checking.
	0.	No parity checking.
	1xx. . . .	Parity checking. 00=Space parity. 01=Odd parity. 10=Even parity. 11=Mark parity.
	. . . . 1. . .	Suppress TWX prompting sequence.
	xxx	Control of TWX transmit parity generation.
	. . . . .0. .	No parity generation (controlled by XLTBL).
	. . . . .1xx	Parity generated. 00=Space parity. 01=Odd parity. 10=Even parity. 11=Mark parity.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
124(7C) CCBSSF2		Start stop dynamic bit
	1.	TWX read ahead is active.
	. . x.	WTTY only, EOB possible: 1=EOB possible. 0=EOB not possible.
	. . . x	WTTY only, EOT possible: 1=EOT possible. 0=EOT not possible.
	1	Allow storing of data (Character mode).

CONFIGURATION DATA SET — CDS

Program: NCP, EP, PEP

Size in bytes: 66(42)

Created by: MOSS passes the CDS at initialization time. After initialization uses the information, CDS is overwritten.

Pointer to CDS: NCP/PEP—CXFSTART; EP—EPCDSBUF

Function: Contains identification information on all boards in the controller. It also contains identification and installation information on all adapters.

Identification Information on 10 Possible Board Positions (Each board position has the same 4-byte format.)

0(0) CDSBDAD* CLAB1 board address.	1(1) CDSBDTYP* CLAB1 board type. (X'01')	2(2) CDSBDID* CLAB1 board identifier. (X'01')	3(3) CDSBDCA* CAs installed on CLAB1 board.
4(4) CLAB2 board address.	5(5) CLAB2 board type. (X'01')	6(6) CLAB2 board identifier. (X'02')	7(7) CAs installed on CLAB2 board.
8(8) LAB3 board address.	9(9) LAB3 board type. (X'04')	10(A) LAB3 board identifier.	11(B) Always X'00'.
12(C) Frame-redrive board address.	13(D) Frame-redrive board type. (X'80')	14(E) Frame-redrive identifier. (X'00')	15(F) Always X'00'.
16(10) LAB6 board address.	17(11) LAB6 board type. (X'04')	18(12) LAB6 board identifier.	19(13) Always X'00'.
20(14) LAB5 board address.	21(15) LAB5 board type. (X'04')	22(16) LAB5 board identifier.	23(17) Always X'00'.
24(18) LAB4 board address.	25(19) LAB4 board type. (X'04')	26(1A) LAB4 board identifier.	27(1B) Always X'00'.

*Indicates a byte expansion follows.

28(1C) LAB7 board address.	29(1D) LAB7 board type. (X'04')	30(1E) LAB7 board identifier.	31(1F) Always X'00'.
32(20) LAB8 board address.	33(21) LAB8 board type. (X'04')	34(22) LAB8 board identifier.	35(23) Always X'00'.
36(24) CAB board address.	37(25) CAB board type. (X'02')	38(26) CAB board identifier. (X'00')	39(27) CAs installed on CAB board.

CSP Identifier Group—Same format for all 16 bytes.

40(28) CDSCSPID* Identifier for CSP 0.	41(29) Identifier for CSP 1.	42(2A) Identifier for CSP 2.	43(2B) Identifier for CSP 3.
44(2C) Identifier for CSP 4.	45(2D) Identifier for CSP 5.	46(2E) Identifier for CSP 6.	47(2F) Identifier for CSP 7.
48(30) Identifier for CSP 8.	49(31) Identifier for CSP 9.	50(32) Identifier for CSP A.	51(33) Identifier for CSP B.
52(34) Identifier for CSP C.	53(35) Identifier for CSP D.	54(36) Identifier for CSP E.	55(37) Identifier for CSP F.

CA Identifier Group—Same format for all six bytes.

56(38) CDSCAID* Identifier for CA position 1.	57(39) Identifier for CA position 2.	58(3A) Identifier for CA position 3.	59(3B) Identifier for CA position 4.
60(3C) Identifier for CA position 5.	61(3D) Identifier for CA position 6.		

	62(3E) Box serial number.
64(40) Box serial number.	

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CDSBDAD (Applies to 11 bytes)		Board installed and address.
	10.	Board not installed.
	. .xx x. . .	Primary (frame) redrive address. 000=Frame 1 boards. 001=Frame 2 boards.
	xxx	Secondary (board) redrive address.
1(1) CDSBDTYP (Applies to 11 bytes)		Board type.
	X'01'	CLAB.
	X'02'	CAB.
	X'04'	LAB.
	X'08'	Frame redrive.
2(2) CDSBDID (Applies to 11 bytes)		Board identifier.
	X'01'	CLAB1 if CDSBDTYP=X'01' Lab type A if CDSBDTYP=X'04'.
	X'02'	CLAB2 if CDSBDTYP=X'01'. LAB type B if CDSBDTYP=X'04'.
	X'03'	C2LB if CDSBDTYP=X'01'
3(3) CDSBDCA (Applies to 11 bytes)		CAs installed on a board
	X'00'	No CAs installed.
	1	CA position 1 installed.
	. . . . . .1 .	CA position 2 installed.
	. . . . .1 . .	CA position 3 installed.
	. . . . 1. . .	CA position 4 installed.
	. . .1	CA position 5 installed.
	. .1	CA position 6 installed.
		If multiple CAs are installed on a board, the values are ORed.
	1.	CSP installed on board.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
40(28)–55(37) CDSCSPID		CSP identifier
	1.	CSP not installed.
	.x	1=CSP installed on LAB Type B. 0=CSP installed on LAB Type A. or CLAB.
	. 01.	C2LB installed.
	. . .x	1=CSP 2 installed on LAB. 0=CSP 1 installed on LAB.
	. . . . 1 . . .	CSP IPL successful.
	001	CSP load module identifier.
56(38)–61(3D) CDSCAID		CA identifier
	1.	CA not installed.
	.1	CA has Two Processor Switch.
	. .0	Always zero.
	xxx	CA select mask 000=CA position 1. 001=CA position 2. 010=CA position 3. 011=CA position 4. 100=CA position 5. 101=CA position 6.

CA ERP CONTROL BLOCK CER

Program: NCP, EP, PEP

Size in bytes: 36(24)

Created by: CXASCB, the shared control block module.

Pointer to CER: CERCBP fields in CERVT.

Function: Serves as a communications area between levels 1, 3, and 4 and also between level 3 interrupts when a CA is to be disabled as a result of level 1 errors. CER contains information on the current state of the disable sequence on the CA, and stores external registers for use by the ERP processing in level 3.

One CER is generated for each of the six possible CAs regardless of how many CAs are installed or generated.

0(0) CERSELM* CA select mask.	1(1) CERCCW Current CCW.	2(2) CERENAB* CA enable mask.
4(4) CERXR60 CA initial select bits.		6(6) CERXR61 CA CCW and subchannel address.
8(8) CERXR62 CA data status inputs.		10(A) CERXR63 ESC subchannel address and status.
12(C) CERXR67 CA enable/disable indicators.		14(E) CERXR6B ESC TIO address and status.
16(10) CERXR6F Level 3 interrupt and CA select.		18(12) CERSTATE* Current state of ERP sequence.
20(14) CERCAOP1 OUT X'2' operations to be performed.		22(16) CERCAOP2 OUT X'7' operations to be performed.
24(18) CERSENSE Sense byte.	25(19) CERDSCT Disabled attempted count.	26(1A) Reserved.

*Indicates a byte expansion follows.

28(1C) CERCABP Pointer to CAB associated with CER by select bits. (NCP)
32(20) CERCCBP Pointer to CCB associated with CER by select bits. (EP)

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CERSELM		CA select mask.
	X'00'	CA position 1 select mask.
	X'02'	CA position 2 select mask.
	X'04'	CA position 3 select mask.
	X'06'	CA position 4 select mask.
	X'08'	CA position 5 select mask.
	X'0A'	CA position 6 select mask.
2(2) CERENAB		CA enable mask.
	X'8000'	CA position 5 enable mask.
	X'2000'	CA position 6 enable mask.
	X'00C0'	CA position 1 enable mask.
	X'0030'	CA position 2 enable mask.
	X'000C'	CA position 3 enable mask.
	X'0003'	CA position 4 enable mask.
18(12) CERSTATE	Byte 0	Current state of ERP sequence.
	1...	Wait for command to clear.
	.1..	Stacked status.
	..1.	Sense transferred.
	...1	Attempted disable
	.... 1...	Disabled.
		(Bits 5, 6, 7 reserved)
	Byte 1	
	1...	Need TGs inhibited.
	.1..	TGs inhibited
	..1.	EP requires control.
		(Bits 3, 4, 5, 6, 7 reserved)

CA ERP CONTROL BLOCK VECTOR TABLE CERVT

Program: NCP, EP, PEP

Size in bytes: 24(18)

Created by: CXASCB, the shared control block module.

Pointer to CERVT: SYSCERP field at X'68' in HWE.

Function: Contains pointers to all CERs. When the CA is put in the error-recovery-procedure state, level 1 sets the ERP flags which the level 3 router tests to determine if it should pass control to the ERP routines.

0(0) CERVTFLG* ERP flags for CA position 1.	CERVTBP Pointer to CA position 1 ERP control block (CER).
4(4) ERP flags for CA position 2.	Pointer to CA position 2 ERP control block (CER).
8(8) ERP flags for CA position 3.	Pointer to CA position 3 ERP control block (CER).
12(C) ERP flags for CA position 4.	Pointer to CA position 4 ERP control block (CER).
16(10) ERP flags for CA position 5.	Pointer to CA position 5 ERP control block (CER).
20(14) ERP flags for CA position 6.	Pointer to CA position 6 ERP control block (CER).

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CERVTFLG (Applies to six bytes)	1.	ERP flags CA in ERP state (Bits 1 through 7 reserved)

CLUSTER GENERAL POLL EXTENSION TO DVB CGP

Program: NCP

Size in bytes: 24(18)

Located in: DVB

Created by: NCP generation.

Pointer to CGP: DVBCLSO field in DVB.

Function: Contains information necessary to reinitiate suspended sessions of general polled devices.

0(0)** CGPFLGS* Flags	CGPRVTE Pointer to RVT entry.		
4(4)** CGPSSC Suspended sessions count.	5(5)** CGPSSS Suspended sessions serviced.	6(6)** CGPSSRC Suspended sessions remembrance count.	7(7)** Reserved

*Indicates a byte expansion follows.

Cluster Suspended Sessions QCB
(See QCB for work queues for all bit definitions.)

8(8)**	CGP1ECB Pointer to first DVB queued.
12(C)**	CGPLECB Pointer to last DVB queued.
16(10)** CGPPRKEY Protection key.	CGPLINK Pointer to next QCB in chain.
20(14)** CGPSTAT Task and queue status.	Reserved

**Actual position depends on other extensions present.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CGPFLGS	x.	Flags 1=Use table lookup for next terminal address for poll. 0=Use next sequential terminal address for poll.

CHANNEL CONTROL BLOCK

Program: EP, PEP

Size in bytes: 108(6C)+CHVT

Created by: NCP or EP generation

Pointer to CHCB: XDHEPCH1 field at X'0708' in XDH for CHCB1, XDHEPCH2 field at X'070A' in XDH for CHCB2, etc.

Function: Contains the queues, CHVT and other data unique to a particular channel adapter.

0(0) CASEL* Channel select bits and PEP flags.	2(2) CAIMSK* CA interface mask.
4(4) DDCCBADR Dynamic subchannel CCB address.	
8(8) CARSTACT* Reset processing flag.	NSCCBADR Native subchannel CCB address.
12(C) ACCOUNT Active command count.	TERMADR Terminator address.
16(10) PDSOFRST Priority data service out queue first pointer.	
20(14) PDSOLAST Priority data service out queue last pointer.	
24(18) PCDSOFST Priority cycle steal data service out queue first pointer.	
28(1C) PCDSOLST Priority cycle steal data service out queue last pointer.	
32(20) DSOFRST Data service out queue first pointer.	
36(24) DSOLAST Data service out queue last pointer.	

*Indicates that a byte expansion follows.

40(28)	CDSOFRST Cycle steal data service out queue first pointer.
44(2C)	CDSOLAST Cycle steal data service out queue last pointer.
48(30)	CDDOFRST Cycle steal dynadump out queue first pointer.
52(34)	CDDOLAST Cycle steal dynadump out queue last pointer.
56(38)	DSIFRST Data service in queue first pointer.
60(3C)	DSILAST Data service in queue last pointer.
64(40)	CDSIFRST Cycle steal data service in queue first pointer.
68(44)	CDSILAST Cycle steal data service in queue last pointer.
72(48)	SOFRST Status out queue first pointer.
76(4C)	SOLAST Status out queue last pointer.
80(50)	CPSIFRST Poll data service in queue first pointer.
84(54)	CPSILAST Poll data service in queue last pointer.
88(58)	SNOFRST Sense out queue first pointer.
92(5C)	SNOLAST Sense out queue last pointer.
96(60)	SSFRST Stacked status queue first pointer.

100(64)	SSLAST Stacked status queue last pointer.
104(68)	L1L3CCB Error recovery processing field.
108(6C)	CHVT Channel vector table.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)	Byte 0	
CASEL*	1.	PEP flag—Bit on indicates that EP is busy or that a CCB is queued indicating pending EP operation.
	.1	No PI flag—Bit on indicates that a PI is not required to give control to the queue scanner.
	. . .1	Perform output in CA as indicated by bits 0.4-0.6 (Bit is always on).
	. . . . xxx.	CA selection bits—Same as bits 0.4-0.6 of Output X'7'.
	B'000'	CA position 1
	B'001'	CA position 2
	B'010'	CA position 3
	B'011'	CA position 4
	B'100'	CA position 5
	B'101'	CA position 6
	Byte 1	
	.1	Set PI same as bit 1.1 of Output X'7'. (Bit is always on).
2(2) CAIMSK		Channel adapter interface mask—used to check CA interface A bits in Input X'7'.
	X'00C0'	CA position 1 mask.
	X'0030'	CA position 2 mask.
	X'000C'	CA position 3 mask.
	X'0003'	CA position 4 mask.
	X'8000'	CA position 5 mask.
	X'2000'	CA position 6 mask.
8(8) CARSTACT		Reset processing flag.
	X'00'	Reset processing not in progress.
	X'01'	Reset processing in progress.

*The SETPI macro checks byte 0 bit 1 to determine if the Output X'7' instruction should be issued. .

CHANNEL VECTOR TABLE

CHVT
(EP, PEP)

Program: EP, PEP

Size in bytes: Variable, depending on the number of subchannels specified.

Located in: CHCB

Created by: NCP or EP generation.

Pointer to CHVT: SYSCHVTP field in HWE.

Referenced by: Level 1 and level 3 routines.

Function: Allows the level 3 routines to find a line's CCB when only the subchannel address is shown. Allows level 1 routines to initialize the 3725 hardware defined during generation.

<table>
<tr><td>0(0)
CYACHVT
Subchannel addresses
<table><tr><td>Lowest subchannel address</td><td>Highest subchannel address</td></tr></table></td><td>2(2)
Reserved</td></tr>
<tr><td colspan="2">4 thru n*
CYACHEND
Address of the associated LNVT entry for each of the line adapter interfaces (each address occupies 4 bytes.) If even, it points to an active LNVT entry. If odd, it points to a USCCB (formerly dummy CCB).</td></tr>
<tr><td>n+1
X'0001'
Delimiter</td><td>n+3
CHVTPTR
Pointer to the next CHVT or the first CHVT if this is the last.</td></tr>
</table>

*n=the number of line adapter interfaces multiplied by 2, plus 1.

CALL-IN EXTENSION TO DVB — CIE

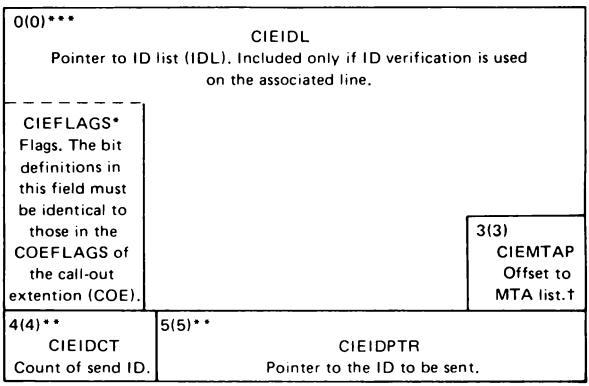
Program: NCP

Size in bytes: Variable.

Created by: NCP generation.

Pointer to CIE: DVBDIAL field in DVB.

Function: Contains optional data required for servicing calls originated by a terminal on a switched line.



*Indicates a byte expansion follows.

**These fields are present in the CIE only if sending of the control unit's identification is required for this device.

***Actual position depends on other extensions that are present. The CIE follows any polling, addressing, or input extensions to the DVB.

† Included only if the device type is multiple terminal access.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) CIEFLAGS		Flags.
	1...	Send hardware ID is required.
	.1..	Receive hardware ID is expected.
	..1.	Dial digits are resident.
	...1	Call-in device (This bit is always one for CIE).
	.... .1..	A dial request is pending for this device.
	.... ..1.	Disconnect with End of Call has been received.
	1	Set Mode is required at telephone connection with this device to set up proper physical line characteristics.

CALL-OUT EXTENSION TO DVB — COE

Program: NCP

Size in bytes: Variable, depending on length of dial digits.

Created by: NCP generation.

Pointer to COE: DVBDIAL field in DVB.

Function: Contains optional data required to call a terminal on a switched line.

<table>
<tr><td colspan="4">0(0)**
COESGTP
Address of device's switched group table (SGT).</td></tr>
<tr><td>COEFLAGS*
Flags. The bit definitions of this field must be identical to those in the CIEFLAGS field of the CIE.</td><td colspan="3"></td></tr>
<tr><td>4(4)**
COELCSTI
Index to LCST (MTA only).</td><td>5(5)**
COEMAX
Maximum field length of dial digits.</td><td>6(6)**
COECUR
Current number of dial digits.</td><td>7(7)**
COEDIAL
Dial digits.
(Variable length)</td></tr>
</table>

*Indicates a byte expansion follows.
**Actual position depends on other extensions that are present.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) COEFLAGS		Flags.
	1...	Send hardware ID is required.
	.1..	Receive hardware ID is expected.
	..1.	Dial digits are resident.
	...1	Call-in device. This bit is always zero for COE.
	.... .1..	A Dial request is pending for this device.
	.... ..1.	Disconnect with End of Call has been received.
	1	Set mode is required at telephone connection with this device.

CONTROL PROGRAM INFORMATION TABLE — CPIT

Program: NCP, EP, PEP

Size in bytes: 60(3C) plus prefix.

Created by: The Call produced by the stage 1 macro NGEN2 for NCP and PEP; by EGENEND for EP. The CPIT is found in the tables assembly.

Pointer to CPIT: SYSCPITP field at X'07BC' in XDA.

Function: Contains all the control program parameters needed by the MOSS microcode.

−4(−4) Reserved		−2(−2) CPIT length (from 0 offset)	
0(0) Level 1 CRP entry count.	1(1) Level 2 CRP entry count.	2(2) Level 3 CRP entry count.	3(3) Level 4 CRP entry count.
4(4) Level 1 CRP entry length.	5(5) Pointer to start of the level 1 CRP subpool.		
8(8) Level 2 CRP entry length.	9(9) Pointer to start of the level 2 CRP subpool.		
12(C) Level 3 CRP entry length.	13(D) Pointer to start of the level 3 CRP subpool.		
16(10) Level 4 CRP entry length.	17(11) Pointer to start of the level 4 CRP subpool.		
20(14) **A** Buffer length.	21(15) Pointer to the address trace control block.**		
24(18) **B** Buffer prefix length.	25(19) Pointer to the branch trace table header. (CXTBTRC for NCP or PEP; CYKBTRC for EP.)		
28(1C) **C** Offset to BP data offset.	29(1D) Pointer to the MOSS alert text table.**		
32(20) **D** Offset to buffer data.	33(21) Offset of binary time field in XDH.**		

**Reserved field on EP-only controller.

Note: Keying symbols refer to the NCP buffer diagram at the end of CPIT.

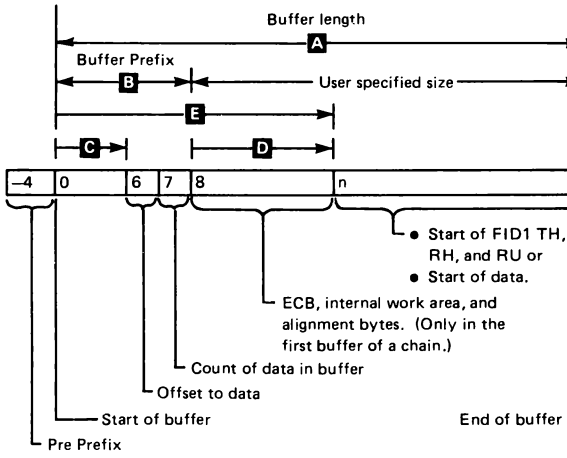
36(24) FID type used by MOSS. (FID1)	37(25) Pointer to the EBCDIC time and date field.**
40(28) Control program type.*	41(29) Pointer to EBCDIC load module ID in the PSB (NCP or PEP) or at CYKEPLID for EP-only.
44(2C) E Offset from start of buffer to data field.	45(2D) Pointer to the CA trace select table.**
48(30) Reserved	49(31) Address of the MOSS outbound queue head pointer.
52(34) Reserved	53(35) Address of the control-code level in the PSB (NCP or PEP) or at CYKEPCCL (EP-only).
56(38) Reserved	57(39) Pointer to the level 1 control block (L1B)

*Indicates a byte expansion follows.
**Reserved field on EP-only controller.
Note: Keying symbol refers to the NCP buffer diagram at the end of CPIT.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
40(28)		Control program type — passed on macro call.
	X'01'	EP
	X'02'	NCP
	X'03'	PEP
	X'06'	NCP link-attached.

NCP Buffer Diagram



CONTROL POINT NOTIFICATION QUEUE CPN

Program: NCP

Size in bytes: 24(18)

Created by: NCP generation

Pointed to by: CXQCPN in the link-edit map.

Function: The explicit route manager SSCP notification processor (CXDBCPN) enqueues NC.ER.INOP and NC.ER.TEST.REPLY PIUs to the CPN queue causing LSA or ER.TESTED to be sent to the SSCP.

Format: Standard input QCB.
Task – CXDBCPN or CXDBTSD
Priority – Appendage
Reentrant – No

CHANNEL PARAMETER TABLE — CPT

Program: NCP

Size in bytes: 12(C)

Created by: NCP generation.

Pointer to CPT: CXTCPT in link-edit map.

Function: Contains channel support parameters, by subarea.

0(0) CPTSUBA Subarea specified on the HOST macro	1(1) Unused	2(2) CPTMAXBU Number of buffer units specified (MAXBFRU)	
4(4) CPTUNTSZ Buffer unit size specified (UNITSZ)		6(6) CPTDELAY Channel attention delay specified (DELAY)	
8(8) CPTATNTO Channel attention time-out specified (TIMEOUT)		10(A) CPTINBFR Buffer allocation specified (INBFR)	11(B) CPTBFPAD Buffer pad used by the host (BFRPAD)

COMMIT REQUEST BLOCK — CRB

Program: NCP

Size in bytes: 16(10)

Created by: NCP generation

Pointer to CRB: PSBCRBP field in PSB and SYSCRBP field in HWX + 52(34).

Function: Processed in level 3 or 4 after buffer release or decommit that causes the available buffer total to be above the indicated threshold. Unsatisfied commit requests cause the request (stored in ACB) to be chained here if POST = YES.

0(0)	CRBCWHP First commit request pointer. (CWALL)
4(4)	CRBCWTP Last commit request pointer. (CWALL)
8(8)	CRBSDHP First commit request pointer. (Slowdown)
12(C)	CRBSDTP Last commit request pointer. (Slowdown)

CHECK RECORD POOL — CRP

Program: NCP, EP, PEP.

Size in bytes: 2292(8F4) for all four sub-pools. The CRP contains a header, a level 1 sub-pool, level 2 sub-pool, level 3 sub-pool, and a level 4 sub-pool. Each sub-pool contains a control block and eleven unit entries. Each entry has a header and a box error record (BER) data area. The length of each BER area depends upon the program level: level 1=70(46); level 2=46(2E); level 3=42(2A); level 4=38(26).

Created by: CXASCB calling macro CXTCRP to generate the CRP.

Referenced by: CXACRPP and CXACRPM.

Location: CXASCB, the shared module.

Pointer to CRP: SYSCKRP field in HWE.

Function: Contains check records that have not yet been processed. Program levels 1, 2, 3, and 4 error-handling routines fill in these check records and level 4 module CXACRPP transforms them into BERs for transfer to MOSS.

Header

0(0)	CRPPTRL1 Pointer to level 1 sub-pool control block.
4(4)	CRPPTRL2 Pointer to level 2 sub-pool control block.
8(8)	CRPPTRL3 Pointer to level 3 sub-pool control block.
12(C)	CRPPTRL4 Pointer to level 4 sub-pool control block.

Sub-pool Control Block

0(0) CRPLCRCT Lost check-record count.	1(1) CRPNAPTR Pointer to the next available unit for this level to use.
4(4) CRPSIZE CRP unit size.	5(5) CRPNSPTR Pointer to the next unit in this level needing service.

Unit Entry Format

0(0) CRPFLG* CRP flag	1(1) Reserved

Start of BER Data (CRPDATA)

2(2)–n
Formatted information. See the BER control block for the types of BERs for each program level.

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		CRP flag.
CRPFLG	1.	End of check-record sub-pool. (Bits 1 through 6 reserved).
	 1	Check-record unit has been used (filled) and requires service.

COMMAND TABLE

Cmd. Tbl.
(EP, PEP)

Program: EP, PEP

Size in bytes: 48(30)

Located in: Routine CYAIS of module CYKSVC/CYLSVC

Created by: NCP or EP generation.

Referenced by: ICP

Function: Contains the CCB command codes used for translating the 8-bit host command code into the 5-bit EP CCB command code.

0(0)–47(2F)
CMDTABLE CCB command codes. (See Section 7.)

COMMUNICATION LINE TIMER AND RAS CONTROL TABLE — CTB

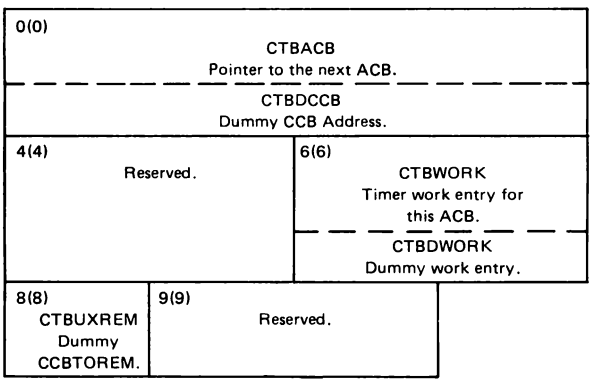
Program: NCP

Size in bytes: 11(B)

Created by: NCP generation.

Pointer to CTB: None. See link-edit map

Function: Indicates end of timer resolution queues. This table must be located at least 25 bytes from start of a CSECT.



COMMON PHYSICAL UNIT BLOCK CUB

Program: NCP

Size in bytes: 144(90)

Created by: Physical unit specification at NCP generation. One CUB is generated for each physical unit.

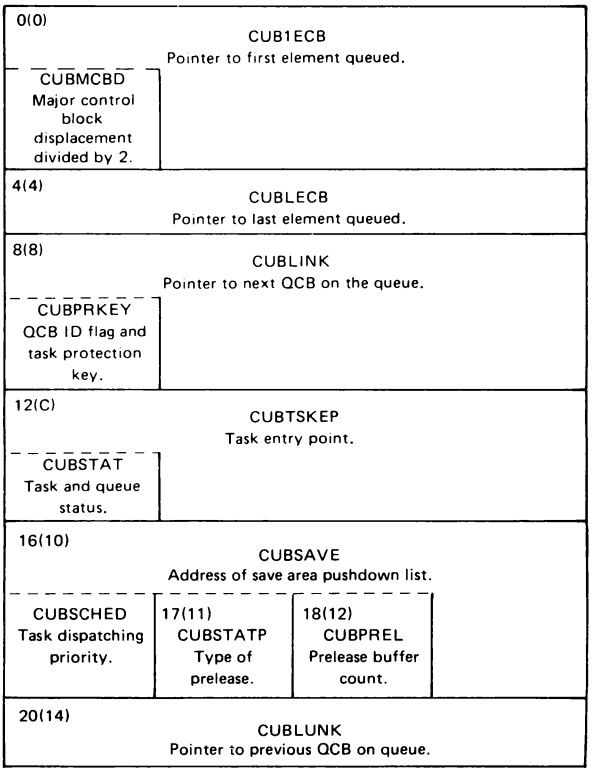
Pointer to CUB: RVTRP field in RVT and in the SOT.

Function: Contains the QCB, status information, and scheduling information for a physical unit.

Index

Name	Offset	Name	Offset	Name	Offset
CPQBHSCH	140(8C)	CUBLOBH	24(18)	CUBRTCNT	60(3C)
CPQLECB	124(7C)	CUBLOBT	28(1C)	CUBSAVE	16(10)
CPQLINK	128(80)	CUBLOSH	32(20)	CUBSCHED	16(10)
CPQLUNK	140(8C)	CUBLOST	36(24)	CUBSEGSZ	108(6C)
CPQMCBD	120(78)	CUBLUN	112(70)	CUBSLC	61(3D)
CPQPREL	138(8A)	CUBLUNK	20(14)	CUBSNPM	28(1C)
CPQPRKEY	128(80)	CUBLUV	112(70)	CUBSRTLR	64(40)
CPQSAVE	136(88)	CUBMAXN	106(6A)	CUBSRTR	90(5A)
CPQSCHED	136(88)	CUBMCBD	0(0)	CUBSRTT	88(58)
CPQSTAT	132(84)	CUBNR	56(38)	CUBSSCF	46(2E)
CPQSTATP	137(89)	CUBNS	57(39)	CUBSSCP	47(2F)
CPQTSKEP	132(84)	CUBOCF	49(31)	CUBSSTAT	105(69)
CPQ1ECB	120(78)	CUBOCL	62(3E)	CUBSTAT	12(C)
CUBADRC	40(28)	CUBOCLS	71(47)	CUBSTATP	17(11)
CUBAPIU	52(34)	CUBOFSET	94(5E)	CUBSTATS	48(30)
CUBCBBP	96(60)	CUBPCNT	52(34)	CUBSTMOD	92(5C)
CUBCFGX	100(64)	CUBPNS	32(20)	CUBSTRC	96(60)
CUBCOC	63(3F)	CUBPREL	18(12)	CUBTCNT	50(32)
CUBCPNA	110(6E)	CUBPRKEY	8(8)	CUBTERR	68(44)
CUBEERS	24(18)	CUBPSTAT	104(68)	CUBTIACT	84(54)
CUBERPCS	70(46)	CUBRCBO	116(74)	CUBTINCT	86(56)
CUBERPT	69(45)	CUBRCMD	65(41)	CUBTPCNT	76(4C)
CUBERS	58(3A)	CUBRCNT	80(50)	CUBTRTCT	72(48)
CUBIMRC	78(4E)	CUBRECNT	74(4A)	CUBTSKEP	12(C)
CUBISNPM	93(5D)	CUBRNREC	107(6B)	CUBTYPE	36(24)
CUBLECB	4(4)	CUBRPCNT	82(52)	CUB1ECB	0(0)
CUBLINK	8(8)	CUBRSE	44(2C)	CUB2ERPT	66(42)
CUBLKB	40(28)				

Link Inbound Queue (CUBLIQ) Control Block
(See QCB for input queues for all bit definitions.)



Link Outbound Queue (LOBQ) Control Block

24(18) CUBLOBH Link outbound queue head pointer.	
CUBEERS Extended retry status.**	
28(1C) CUBLOBT Link outbound queue tail pointer.	
CUBSNPM SNP mask of SSCP that issued contact.	

**Refer to the LXBEXTST field of the link XIO control block for a definition of the status bits.

Link Outstanding Queue (LOSQ) Control Block

32(20) CUBLOSH Link outstanding queue head pointer.	
CUBPNS NS at time of poll.	
36(24) CUBLOST Link outstanding queue tail pointer.	
CUBTYPE* Station type.	
40(28) CUBLKB Address of link control block.	
CUBADRC SDLC addressing character.	

44(2C) CUBRSE Network address of resource.	46(2E) CUBSSCF*	
	Service-seeking control flags.	47(2F) CUBSSCP* Contact poll commands.

*Indicates a byte expansion follows.

48(30) CUBSTATS* Station status.	49(31) CUBOCF* Service-seeking output control flags.	50(32) CUBTCNT Transmission counter.	
52(34) CUBAPIU Address of physical services PIU.			
CUBPCNT Pass limit.			
56(38) CUBNR NR receive count.	57(39) CUBNS NS send count.	58(3A) CUBERS Error retry status.**	
60(3C) CUBRTCNT		62(3E) CUBOCL	
1st level ERP retry count.	61(3D) CUBSLC 2nd level ERP retry count.	Outstanding count limit.	63(3F) CUBCOC Current outstanding count.
64(40) CUBSRTLR Second level retry count.	65(41) CUBRCMD* Run command modifiers.	66(42) CUB2ERPT 2nd level ERP time-out value.	
68(44) CUBTERR Monitor secondary error count.	69(45) CUBERPT 2nd level ERP time delay.	70(46) CUBERPCS ERP control flags send.	71(47) CUBOCLS Outstanding count limit savearea.
72(48) CUBTRTCT Total retry counter.		74(4A) CUBRECNT Receive I-format error counter.	
76(4C) CUBTPCNT Total transmission counter.		78(4E) CUBIMRC Intensive mode record counter.	
80(50) CUBRCNT I-format received counter.		82(52) CUBRPCNT S-format received counter.	

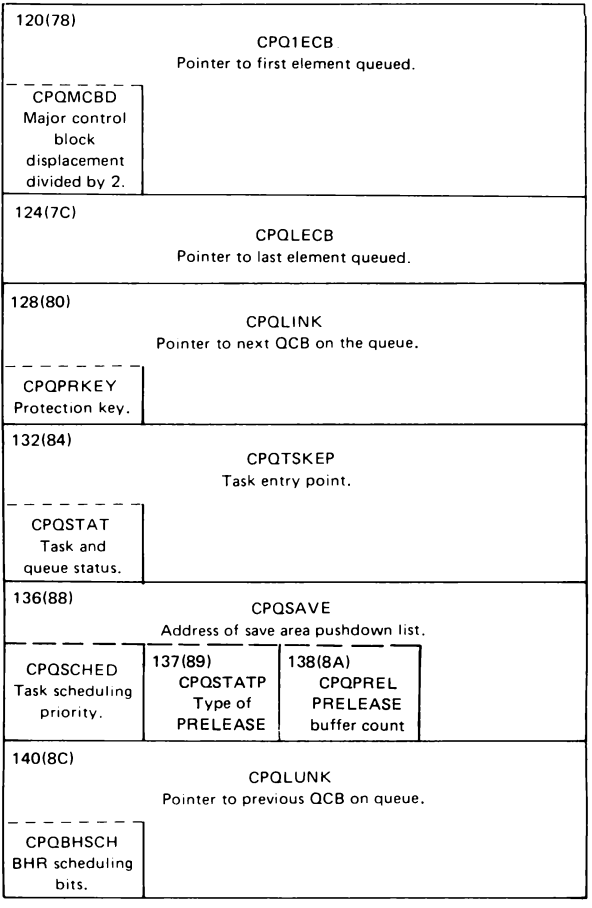
*Indicates a byte expansion follows.

**Refer to the LXBSTAT and LXBSTATC fields of the Link XIO Control Block for a definition of the status bits.

84(54) CUBTIACT Total acknowledged I-format counter.		86(56) CUBTINCT Total I-format retransmission counter.	
88(58) CUBSRTT Total transmission threshold value.		90(5A) CUBSRTR Total retries threshold value.	
92(5C) CUBSTMOD* Flag byte.	93(5D) CUBISNPM Intensive mode SNP mask.	94(5E) CUBOFSET Offset from BH to TH.	
96(60) CUBSTRC* Session trace flags	CUBCBBP Pointer to the committed buffers block.		
100(64) CUBCFGX Pointer to CUB extension (CXB).			
104(68) CUBPSTAT* Physical unit primary status.	105(69) CUBSSTAT* Physical unit secondary status.	106(6A) CUBMAXN Segment size (in buffers).	107(6B) CUBRNREC RNR except count.
108(6C) CUBSEGSZ Maximum segment size (in bytes).		110(6E) CUBCPNA Network address of SSCP that issued an Activate PU to the cluster.	
112(70) CUBLUN Maximum number of entries in LUV.	CUBLUV Pointer to LU vector table (LUV).		
116(74) CUBRCBO RCB offset	117(75) Reserved		

*Indicates a byte expansion follows.

SSCP-PU CPM Out Processing Queue (CUBPPQ)
(See QCB for input queues for bit definitions.)



Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
36(24) CUBTYPE		Station type:
	x...	Data mode 1=Duplex station. 0=Half-duplex station.
	.1..	Continue polling in ANS.
	..1.	Switched SDLC station.
	...1	Resource eligible for NPA data collection.
	.... x...	Secondary link bit. 0=Link is primary 1=Link is secondary
	.... .1..	Terminal node (type 1 PU).
	.... ..1.	Cluster controller (type 2 PU).
	x	1=Intermediate node (INN). 0=Boundary node (BNN).
	0... ...1	Half duplex INN
	1... ...1	Duplex INN
46(2E) CUBSSCF	Byte 0	Service seeking commands:
	1...	Poll skip flag.
	.1..	Halt service seeking.
	..1.	Not operational.
	1...	Link test level 2 (LL2) active.
	.1..	Link test level 2 (LL2) pending.
	1	Contact Poll command active.
47(2F) CUBSSCP	Byte 1	Contact poll commands:
	1...	Disconnect Mode. (DISC)
	.1..	Set Normal Response Mode. (SNRM)
	..11 111.	Poll command mask.
	.... 1...	XID with data
	.... .1..	Set Initialization Mode (SIM).
	.... ..1.	Exchange Identification (XID).
	.... .11.	Disconnect modifier (Local-to-local link)
	1	Contact poll command field.

Primary States (see individual bit definitions preceeding).

Byte 0	Byte 1	Meaning
1010 0000	0000 0001	Reset
1010 0001	0100 0001	Contact pending
1110 0001	1100 0001	Contact and Discontact pending
0000 0000	0000 0001	Active
0010 0000	0000 0001	Load/Dump/RPO active
1010 0001	0000 0101	SIM pending
1010 0001	1000 0001	DISC pending (SCBAPIU=0)
1010 0001	1000 0001	Discontact pending (SCBAPIU≠0).
1010 1000	0000 0001	Link test level 2 (LL2) active.
1010 1100	0000 0001	Link test level 2 (LL2) pending.
1110 1000	0000 0001	Link test level 2 (LL2) ending.
1010 0001	0000 0010	XID.

Secondary States (see individual bit definitions preceeding).

Byte 0	Byte 1	Meaning
1010 0001	0000 0001	Reset
1010 0001	0100 0001	Contact pending or Contact pending with SNRM
0000 0000	0000 0001	Active
1010 0001	1000 0001	DISC pending
1010 0001	1000 0111	Discontact pending

Offset/Field Name	Bit Pattern/ Hex Value	Contents
48(30) CUBSTATS		Station status:
	1. . .	IPL/DUMP/RPO in progress for active secondary.
	.1. .	Link test level 2 (LL2) active.
	. .1.	Station quiesce pending.
	. . .1	Remote power-off in progress.
	. . . . 1. . .	SIM can be accepted over the link associated with this station.
	. . . . .1. .	COMMIT in progress for this station.
	. . . . . .1.	One or more SDLC error record counters has reached its limit.
	1	Device available to dynamic reconfiguration.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
49(31) CUBOCF		Service-seeking output control flags:
	1.	Output skip bit.
	.1	Run terminator interlock.
	. .1	RNR received.
	. . .1	Second level delay in progress.
	. . . . .1 . .	Duplex SDLC scheduling.
	. . . . . .1 .	RNR repoll or half-duplex poll control.
	1	Half-duplex poll in progress.
65(41) CUBRCMD		Run command modifiers:
	.1	Override 1st and 2nd level retries.
	. . .1	Immediate retry.
	. . . . . .1 .	Waiting on a good response to poll.
92(5C) CUBSTMOD		Flag byte. Set/reset at levels 2, 3, or 5. Level 5 may alter these flags only with a XIO Setmode.
	1.	Intensive Mode (IM) active.
	.1	IM stop in progress for SETCV(IM).
	. .1	IM stop progress for slowdown.
96(60) CUBSTRC		Session trace flags
	1.	Last outbound PIU was expedited.
	.1	Next-to-last outbound PIU was expedited.
	. .1	Last inbound PIU was expedited.
	. . .1	Next-to-last inbound PIU was expedited.
	. . . . 1. . .	Session trace for all resources.
	. . . . .1 . .	Session trace for a specific resource.
104(68) CUBPSTAT		SSCP-PU session status Primary half-session
	1.	Session established
	.1	Processing session initiating request.
	. .1	Processing session terminating request.
		Secondary half-session.
	. . .1	Session established
	. . . . 1. . .	ACTPU pending
	. . . . .1 . .	DACTPU pending.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
105(69) CUBSSTAT		Physical unit secondary status:
	1...	3270 station.
	.... 1...	Network address required.
	.... .1..	Control block contains usable control vector information.
	.... ..1.	PU added by dynamic reconfiguration.
	1	Dynamic reconfiguration in progress.

COMMON PHYSICAL UNIT BLOCK EXTENSION CXB

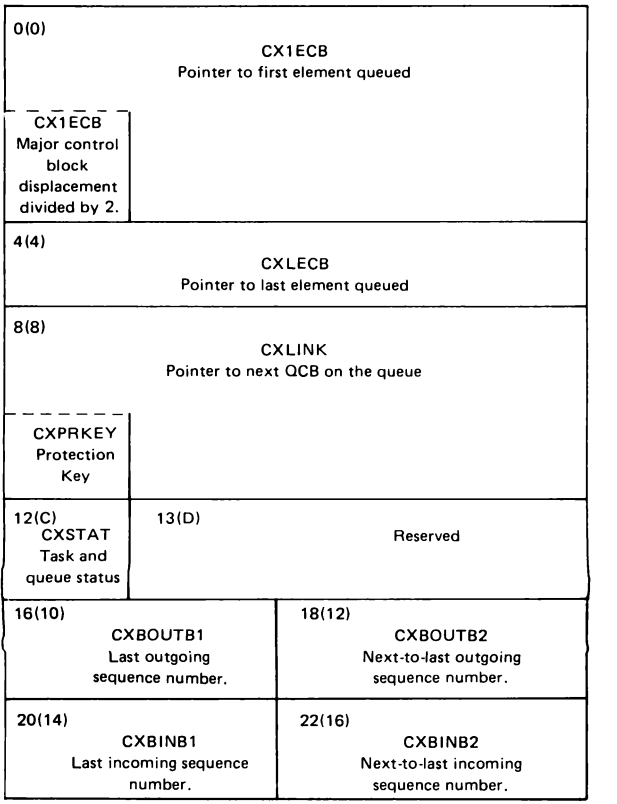
Program: NCP

Size in bytes: 24(18)

Pointer to CXB: CUB + 64 (CUBCFGX)

Created by: NCP generation.

Function: Contains Request Work Queue for a physical unit.



CHANNEL ADAPTER TRANSFER PARAMETER TABLE CXP

Program: NCP

Size in bytes: 8(8)

Created by: NCP generation.

Pointer to CXP: CXTCXP in link-edit map.

Function: Contains channel adapter transfer parameters.

<table>
<tr><td>0(0)
CXPBPAD
Buffer pad value.</td><td>1(1)
CXPINBF
Number of buffers for incoming data.</td><td>2(2)
CXPMXBF
Number of SSCP read CCWs allocated for receiving data.</td></tr>
<tr><td colspan="2">4(4)
CXPUNSZ
Size of SSCP buffer units used for receiving data.</td><td>6(6)
CXPOXSZ
Maximum supported NCP to SSCP data transfer size.</td></tr>
</table>

DEVICE ADDRESSING EXTENSION TO DVB — DAE

Program: NCP

Size in bytes: Variable, depending on addressing characters.

Located in: DVB

Created by: NCP generation.

Pointer to DAE: (None.) Immediately follows polling extension; if no polling extension is present, the DAE immediately follows the DVB.

Function: Contains addressing characters for a device.

0(0)*	1(1)*	2(2)*
DAEOSP Device output delay.	DAEACUR Current number of addressing characters	DAEADDR Addressing characters. (DVBAO field in the DVB points here.) (variable length)

*Actual position depends on the extensions that are present.

DUMMY DATA BUFFER—CHANNEL ADAPTER DDB (Type=CA)

Program: NCP

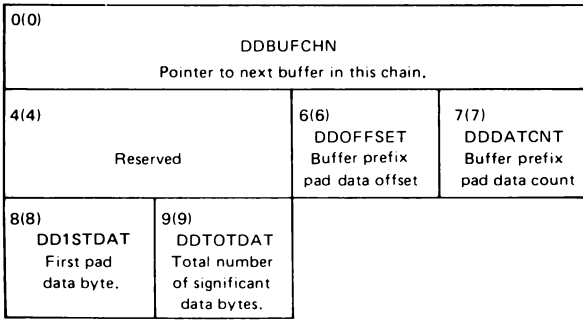
Size in bytes: 10(A)

Located in: .$LVL5

Created by: NCP generation.

Pointer to DDB: CABDUMBF field in CAB extension.

Function: Contains a dummy buffer the NCP channel IOS program uses to transmit (for each PIU) the number of pad characters required by the host access method. The number of characters transmitted, if any, is specified by the BFRPAD operand of the HOST macro. The actual pad characters to be transmitted are not specified; whatever happens to be in the storage locations is transmitted.



DUMMY DATA BUFFER – PERFORMANCE MEASUREMENT FACILITY

DDB (Type=PMF)

Program: NCP

Size in bytes: 239(EF)

Located in: $LVL5

Created by: NCP generation.

Pointer to DDB: PMFCUC field in the PMF points to the CUC DDB; PMFFBFRS field in the PMF points to the NCP free-buffer DDB.

Function: Contains the statistics developed for the cycle utilization counter (CUC) or the NCP free-buffers. The CUC DDB is identical to the NCP free-buffer DDB – some values set during initialization may be different.

Note: The data in the CUC DDB is valid only when the CUC-installed bit in the SYSCONF1 byte of the HWX is 1.

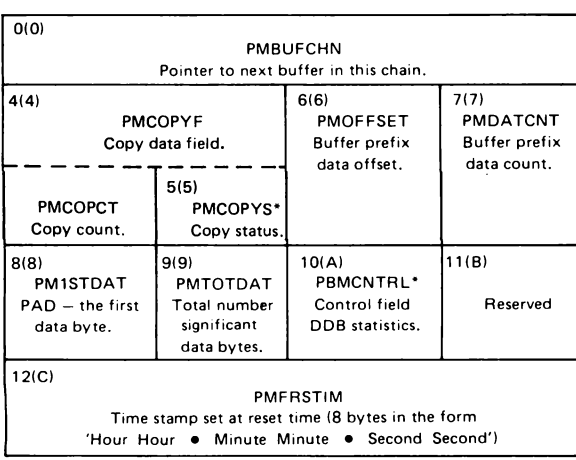
Index

Field Name	Offset to Field				
	Unique/ 1st Stage	2nd Stage	3rd Stage	4th Stage	5th Stage
PMBCNTRL	10(A)				
PMBUFCHN	0(0)				
PMCOPYF	4(4)				
PMCOPYS	5(5)				
PMCOPYT	4(4)				
PMDATCNT	7(7)				
PMFCELT	40(28)	92(5C)	124(7C)	156(9C)	188(BC)
PMFCELTC	28(1C)	80(50)	112(70)	144(90)	176(B0)
PMFCLVAL	32(20)	84(54)	116(74)	148(94)	180(B4)
PMFCNTRL	38(26)	90(5A)	122(7A)	154(9A)	186(BA)
PMFFBFHG†	184(B8)				
PMFFLRT	42(2A)	94(5E)	126(7E)	158(9E)	190(BE)
PMFFLRTC	30(1E)	82(52)	114(72)	146(92)	178(B2)
PMFFLVAL	34(22)	86(56)	118(76)	150(96)	182(B6)
PMFHBUCW	62(3E)				
PMFHIST	64(40)				
PMFHSCAL	61(3D)				
PMFILCNT	36(24)	88(58)	120(78)	152(98)	184(B8)
PMFINLMT	44(2C)	96(60)	128(80)	160(A0)	192(C0)
PMFLRAWI	24(18)				
PMFNAVG	26(1A)	78(4E)	110(6E)	142(8E)	174(AE)
PMFNCNT	20(14)	72(48)	104(68)	136(88)	168(A8)
PMFNSUM	20(14)	72(48)	104(68)	136(88)	168(A8)
PMFPCLMT	48(30)				

† For NCP free-buffers only.

Field Name	Offset to Field				
	Unique/ 1st Stage	2nd Stage	3rd Stage	4th Stage	5th Stage
PMFPSCAL	60(3C)				
PMFRSPNS	39(27)	91(5B)	123(7B)	155(9B)	187(BB)
PMFRSTIM	12(C)				
PMFUBFHG††	184(B8)				
PMFZERO	58(3A)				
PMF001PC	56(38)				
PMF010PC	54(36)				
PMF100PC	52(34)				
PMOFFSET	6(6)				
PMTOTDAT	9(9)				
PM1STDAT	8(8)				

†† For CUC only.



*Indicates a byte expansion follows.

DDB
(Type=PMF)

First (16^1) Hexadecimal Counter Stage

20(14) PMFNSUM Sum of N number of data elements. PMFNCNT N number of data elements summed in this stage.	
24(18) PMFLRAWI Last raw input data element (For CUC, DDB, one-eighth of cycles since last reset)	26(1A) PMFNAVG Average of the last 16 data elements (sum shifted 4 bits).
28(1C) PMFCELTC** Ceiling threshold exceeded counter/alarm.	30(1E) PMFFLRTC** Floor threshold exceeded counter/alarm.
32(20) PMFCLVAL Ceiling value. X'0000'	34(22) PMFFLVAL Floor value. X'FFFF'
36(24) PMFILCNT** Input (domain) exceeded counter/alarm.	38(26) PMFCNTRL* Local control flags. X'F3' 39(27) PMFRSPNS* Local response flags.
40(28) PMFCELT Ceiling threshold value. X'FFFF'	42(2A) PMFFLRT Floor threshold value. X'0000'
44(2C) PMFINLMT Raw CUC value.	
48(30) PMFPCLMT 100% of normal input. X'F424'	50(32) Reserved

*Indicates a byte expansion follows.
**Not incremented after reaching XFFFF'.
Note: The hex values shown in the lower right corners of the data area fields are set during initialization.

DDB
(Type=PMF)

52(34) PMF100PC 10% of normal input X'186A'		54(36) PMF010PC 1% of normal input. X'0271'
56(38) PMF001PC 0.1% of normal input X'003E'		58(3A) PMFZERO X'0000'
60(3C) PMFPSCAL* Percent calc. scaling factor control.	61(3D) PMFHSCAL* Histogram scaling factor control.	62(3E) PMFHBUCW Histogram entry width.
64(40) PMFHIST Pointer to the histogram area for this DDB.		
68(44) Reserved		

Second (16^2) Hexadecimal Counter Stage

72(48) PMFNCNT N number of data elements summed in this stage.	PMFNSUM Sum of N number of data elements

76(4C) Reserved	78(4E) PMFNAVG Average of the last 16 data elements (sum shifted 4 bits).
80(50) PMFCELTC** Ceiling threshold exceeded counter/alarm.	82(52) PMFFLRTC** Floor threshold exceeded counter/alarm.
84(54) PMFCLVAL Ceiling value. X'0000'	86(56) PMFFLVAL Floor value. X'FFFF'

*Indicates a byte expansion follows.

**Not incremented after reaching X'FFFF'

Note: The hex values shown in the lower right corners of the data area fields are set during initialization.

DDB
(Type=PMF)

88(58) PMFILCNT** Input (domain) exceeded counter/alarm.	90(5A) PMFCNTRL* Local control flags. ***	91(5B) PMFRSPNS* Local response flags.
92(5C) PMFCELT Ceiling threshold value. X'FFFF'	94(5E) PMFFLRT Floor threshold value. X'0000'	
96(60) PMFINLMT Input (domain) limit value. X'3FFFF'		
100(64) Reserved		

*Indicates a byte expansion follows.
**Not incremented after reaching X'FFFF'.
***Second stage – X'E0'
Third stage – X'E0'
Fourth stage – X'E0'
Fifth stage – X'E9'

Note: Each stage begins on a fullword boundary.

Third (16^3) Hexadecimal Counter Stage – identical to second stage.

Fourth(16^4) Hexadecimal Counter Stage – identical to second stage.

Fifth (16^5) Hexadecimal Counter Stage – identical to second stage.

See the DDB index for the third, fourth, and fifth offsets.

Histogram Area

198(C6)–252(FC) PMFUBFHG (for CUC) PMFFBFHG (for NCP free-buffers) First 26 halfword entries are for data in the normal range. 27th halfword entry is for data outside the normal range.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
5(5) PMCOPYS	.x . .	Copy status. 1=Copy 0=Original
10(A) PMBCNTRL	1	Request for statistics reset.
38(26), 90(5A), 118(76), 146(92), 174(AE) PMFCNTRL		Local control flags.
	1.	Statistics recording is active.
	.1	Ceiling threshold checking is active.
	. .1	Floor threshold checking is active.
	. . .1	Percent calculation is active — constants are defined. Normally, only the 1st hexadecimal stage has this bit on.
	. . . . xx. .	Defines reset function. 00 Don't reset on last hexadecimal stage. 01 Reset statistics on last hexadecimal stage. 10 Stop statistics update; set PMFCNTRL bit 0 to 0 (off) and set PMFRSPNS bit 3 to 1 (on). 11 Reserved.
	xx	Next hexadecimal stage and linkage control. 00 Reserved. 01 Last hexadecimal stage — don't go any further. 10 Reserved. 11 1st hexadecimal stage.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
39(27), 91(5B), 119(77), 147(93), 175(AF), PMFRSPNS		Local response flags.
	1...	Input (domain) limit value exceeded.
	.1..	Ceiling threshold(s) exceeded.
	..1.	Floor threshold(s) exceeded.
	...1	PMFCNTRL bit 0 (statistics recording is active) was turned off when processing the last hexadecimal stage.
	.... 1...	New ceiling value.
	.... .1..	New floor value.
	.... ..1.	Reserved.
	1	Percent calculation was not done, (Scale value was bad — not 0, 1, or 10.)
60(3C) PMFPSCAL		Percent calculation scaling factor control.
	0000 1010	Use ten-tenths resolution (1%)
	0000 0001	Use one-tenth resolution (0.1%)
	0000 0000	Do not perform percent calculation — just do histogram.
61(3D) PMFHSCAL		Histogram scaling factor control
	1000 0000	Each entry width = 1 (shift left 1)
	0000 0000	Each entry width = 2 (no shift)
	0000 0001	Each entry width = 4 (shift right 1)
	0000 0011	Each entry width = 8 (shift right 2)
	0000 0111	Each entry width = 16 (shift right 3)
	0000 1111	Each entry width = 32 (shift right 4)
	0001 1111	Each entry width = 64 (shift right 5)
	0011 1111	Each entry width = 128 (shift right 6)
	0111 1111	Each entry width = 256 (shift right 7)

DEVICE INPUT AREA — DIA

Program: NCP

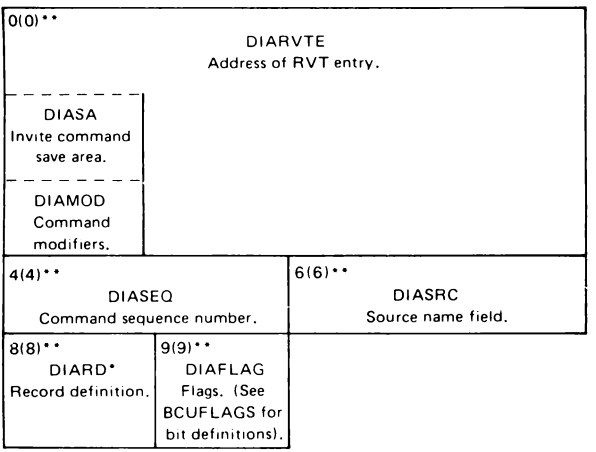
Size in bytes: 10(A)

Located in: DVB extension.

Created by: NCP generation.

Pointer to DIA: DVBINVO field in DVB.

Function: Contains information about input devices.



*Indicates a byte expansion follows.
**Actual position depends on other extensions that are present.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
8(8) DIARD		Record definition.
	.... .1..	EOB=EOT.
	10	Message.
	01	Block.
	11	Transmission.

DISPATCH PRIORITY TABLE — DPT

Program: NCP

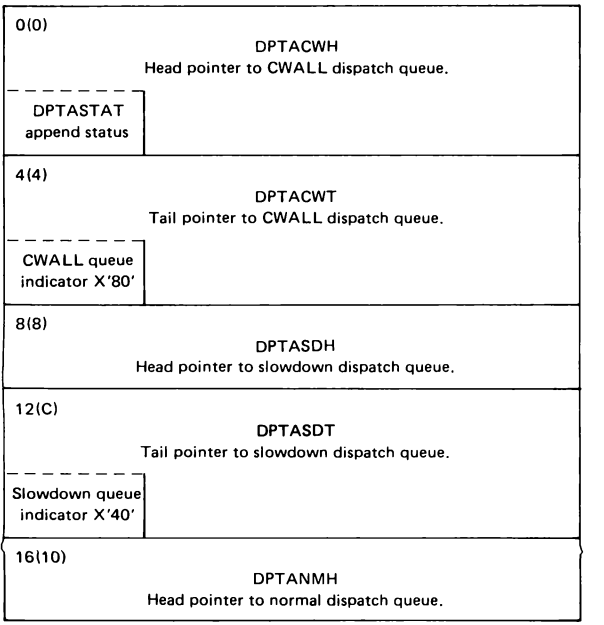
Size in bytes: 128(80)

Created by: NCP generation.

Pointer to DPT: SYSDPTP field in HWX + 48(30)

Function: Contains the head and tail pointers of the priority queues.

Dispatch Queue Block (DQB) for Appendage Priority
(See QCB for dispatch priority queues for all bit definitions)



20(14)
DPTANMT
Tail pointer to normal dispatch queue.

Normal queue indicator X'20'

24(18)
Reserved

28(1C)
Reserved

Dispatch Queue Block (DQB) for Immediate Priority

32(20)–63(3F)
See the appendage priority dispatch queue block for corresponding labels. Immediate labels start with DPTI–. Add 32(20) for offsets.

Dispatch Queue Block (DQB) for Productive Priority

64(40)–95(5F)
See the appendage priority dispatch queue block for corresponding labels. Productive labels start with DPTP–. Add 64(40) for offsets.

Dispatch Queue Block (DQB) for Nonproductive Priority

96(60)–127(7F)
See the appendage priority dispatch queue block for corresponding labels. Nonproductive labels start with DPTN–. Add 96(60) for offsets.

DISPATCH QUEUE BLOCK — DQB

Program: NCP

Size in bytes: 32(20)

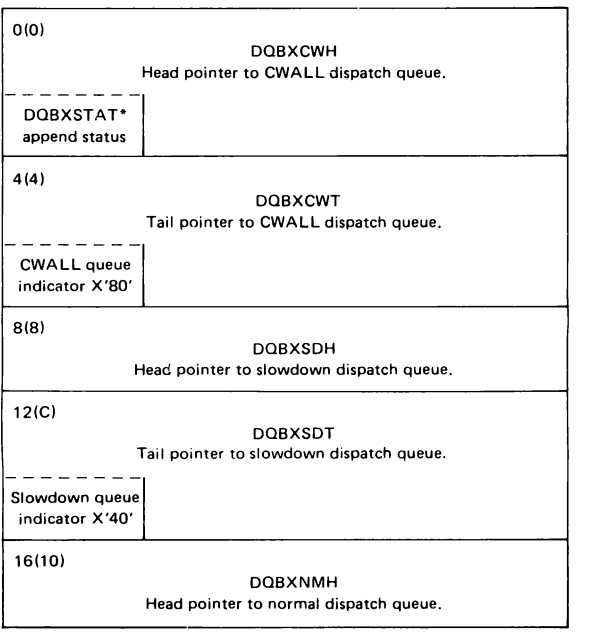
Created by: NCP generation.

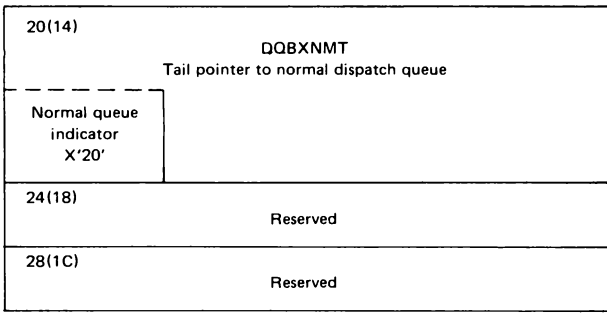
Pointer to DQB: Variable. (See DPT)

Function: Contains the head and tail pointers of the priority queue.

Note: This is the general format for all dispatch priority queues. (The DQBX identifier at the beginning of each label is replaced with a different four letter identifier for each particular dispatch priority queue.)

Dispatch Queue Block (DQB) for any priority





Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) DQBXSTAT		Status dispatch queue
	1. . .	CWALL dispatch queue not empty.
	.1 . .	Slowdown dispatch queue not empty.
	. .1 .	Normal dispatch queue not empty.

DISPLAY/REFRESH/SELECT TABLE DRS

Program: NCP

Size in bytes: 36(24)

Created by: NCP generation.

Pointer to DRS: SYSDRSP field in HWE.

Function: Contains addresses of appendage routines to be given control by CXCCPSUP. The PCBAPNSL field contains the offset into the DRS.

0(0)	Set to 0
4(4)	Reserved
8(8)	DRSPNTST Address of CXPFNLST routine. (Only if panel line test is active)
12(C)	Reserved
16(10)	Reserved
20(14)	Reserved
24(18)	DRSTBL Table of display/refresh/select control values used by individual appendage routines (length of 12 bytes)

DYNAMIC RECONFIGURATION EXTENSION CONTROL BLOCK — DRX

Program: NCP

Size in bytes: 4(4)

Located in: QAB

Created by: NCP generation.

Pointer to DRX: SYSDRXP field in HWX.

Function: Provides control information about DR RVT entries.

0(0)	2(2)
DRXNO Number of network addresses available in the DR extension.	DRXNA Next available address in the DR extension to the RVT.

DISPATCH TABLE *DSP*

Program: NCP

Size in bytes: 8(8). Each entry in the table is one byte.

Created by: NCP generation.

Pointer to DSP: SYSDSPP field in HWX + 44(2C)

Function: Contains offsets into a DQB to the queue from which a task is to be dispatched. The offset into the DSP is determined by ANDing the status mask of a DQB with the complement of the system mask at location X'0684' of XDB.

0(0) – 7(7)
DSPENT*
Offset to a dispatch queue

***Indicates that a byte expansion follows.**

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) DSPENT	Byte 0	Offset to a dispatch queue.
	0000 0000	Offset to CWALL queue.
	0001 0000	Offset to slowdown queue.
	0000 1000	Offset to normal queue.
	1111 1111	Dispatch queue is empty or must not be dispatched.

DEVICE BASE CONTROL BLOCK DVB

Program: NCP

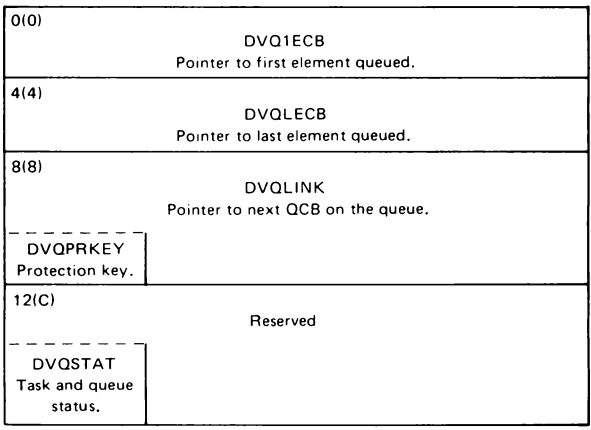
Size in bytes: Variable, depending on extensions present.

Created by: NCP generation. One DVB is generated for each BSC/SS device.

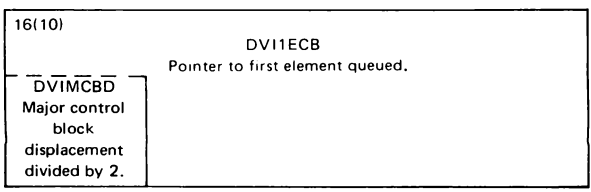
Pointer to DVB: RVTRP field in RVT; LCBDVBP field of LCB during session.

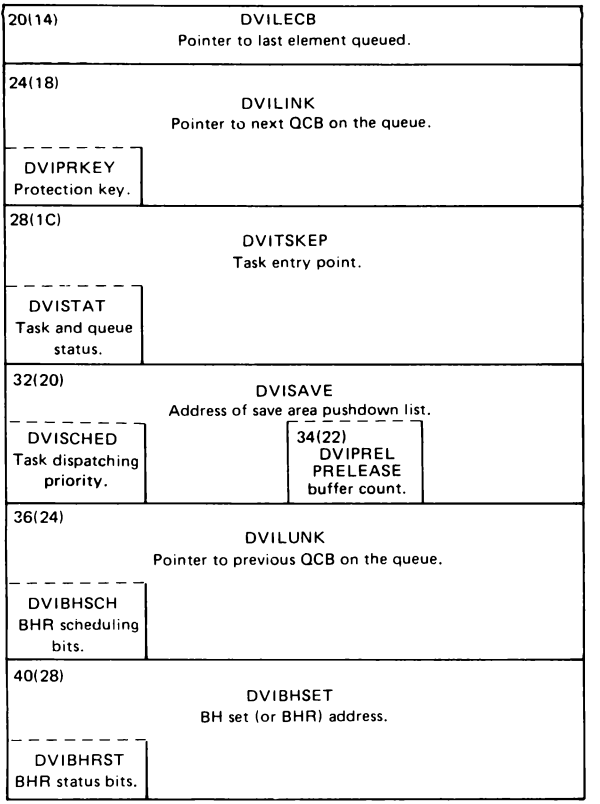
Function: Serves as the base for all component, terminal, and device control unit representations. It includes queue control blocks plus all parameters required by a device.

Device Work QCB
(See QCB for work queues for all bit definitions.)



Device Input QCB
(See QCB for input queues for all bit definitions.)





44(2C) DVBRID Device resource ID.		46(2E) DVBFEAT1* Device features byte 1.	47(2F) DVBFEAT2* Device features byte 2.
48(30) DVBPTR Auxiliary pointer. If device is component, this field contains pointer to shared terminal DVB. If device is terminal, this field contains a pointer to line LCB.			
DVBTYPE* Device type.			
52(34) DVBSDRT Transmission counter (bytes 0 and 1) or pointer to OLTT control block, if in test mode.			
56(38) DVBBHRO Offset to BHR extension.	57(39) DVBBUO Offset to switched backup extension (BUE).	58(3A) DVBDIAL Offset to call-in or call-out extension (CIE or COE).	59(38) DVBABNM* Abnormal mode indicators. This field is meaningful only when a reset is in progress. Bits 2-7 have the value of the command modifiers when a reset is in progress. Bits 0-1 indicate that a deactivation is in progress.
60(3C) DVBSDRE Temporary error counter.	61(3D) DVBINVO Offset to device input area (DIA).	62(3E) DVBRCBO Offset to RCB.	63(3F) DVBSESSC* Cause of DVB session end.
64(40) DVBOLDSP DVB old session partner.		66(42) DVBSRTT Traffic count threshold.	
68(44) DVBSRTR Error count threshold.	69(45) Reserved	70(46) DVBOUTB1 Last outgoing sequence number	71(47) DVBOUTB2 Next-to-last outgoing sequence number.
72(48) DVBOUTB3 Second-from-last outgoing sequence number.	73(49) DVBINB1 Last incoming sequence number.		

*Indicates a byte expansion follows.

Service-Seeking Control Block (SSC)

	74(4A) DVBSTAT* Status byte 1.	75(4B) DVBSTAT2* Status byte 2.
76(4C) DVBDMF* Device mode flags.	78(4E) DVBPCC Pending contact count.	79(4F) DVBSTAT3* Status byte 3.
80(50) DVBSP Session partner address.		

*Indicates a byte expansion follows.

Polling/Addressing Extension

This extension is present only if the device requires polling or addressing, or both.

		82(52) DVBTLIM Transmission limit.	83(53) DVBTCNT Transmission counter.
84(54) DVBAO Offset from DVBSTAT to first addressing character in DAE.	85(55) DVBCLSO Cluster general poll extension (CGP) offset.		

Polling Extension

The following fields are present only if polling of device is required. (If this area is included, the device input extension (DIA) must also be included.)

86(56) DVBPCUR Number of polling characters excluding ENQ.	87(57) DVBPOLL Polling characters. (Variable length.)

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
46(2E) DVBFEAT1		Device features byte 1.
	1...	Block limit - BSC patch control.
	.1..	Conversational capability.
	..1.	Buffered receive.
	...1	General poll.
	.... 1...	Batched message input.
	.... .1..	Carriage return delay.
	.... ..1.	Text time-out suppression.
	1	Break-terminal originated data; transfer can be interrupted.
47(2F) DVBFEAT2		Device features byte 2.
	1...	Critical situation notification.
	.1..	1050 Auto EOB feature.
	..1.	1050 Receive Interrupt feature.
	...1	Resource eligible for NPA data collection.
	.... 1...	Device on fan-out modem.
	.... .1..	Input extension exists (DIA).
	.... ..1.	Addressing extension exists (DAE)
	1	Polling information exists.
48(30) DVBTYPE		Device type.
		Components
	X'48'	2980
		Start-Stop Terminals
	X'80'	MTA
	X'82'	1050
	X'84'	2740, Model 1.
	X'85'	2741
	X'87'	2740, Model 2.
	X'88'	115A
	X'89'	83B3
	X'8A'	TWX
	X'8B'	WTTY
		BSC Terminals.
	X'4C'	3275, 3277, 3284, 3286
	X'C0'	Logical connection terminals.
	X'C1	1130
	X'C2'	1800
	X'C3'	2701
	X'C4'	2703
	X'C5'	2715

Offset/Field Name	Bit Pattern/ Hex Pattern	Contents
	X'C6'	2770
	X'C7'	2780
	X'C8'	2972
	X'C9'	3705, 3725
	X'CA'	2020
	X'CB'	2025
	X'CC'	3271, 3275
	X'CD'	3780
	X'CE'	3735
	X'CF'	3741
	X'D0'	3747
	X'FF'	Sys 3, 3125, 3135
59(3B) DVBABNM		Abnormal mode indicators.
	1...	Deactivate device in progress.
	.1..	Deactivate line orderly in progress.
	..1.	Reset at End of Command in progress.
	...1	Reset conditional in progress.
	.... x...	(Reserved).
	.... .1..	Reset Immediate in progress.
	.... ..1.	Reset Device Queues in progress.
	1	Critical situation notification device serviced.
63(3F) DVBSESSC		Session end
	X'01'	Normal.
	X'07'	Inoperative ER.
	X'0B'	Deactivate VR.
74(4A) DVBSTAT		Status byte 1.
	1...	Service-seeking skip bit.
	.1..	Contact pending.
	..1.	Device active, accept TP commands.
	...1	Disconnect received. A disconnect has been received for the last session, and an initiation command may now be accepted. Any nonsession-initiating TP command should be refused.
	.... 1...	In session.
	.... .1..	Device in abnormal mode (reset or deactivate device in progress).
	.... ..1.	Connection exists.
	1	Invite pending.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
75(4B) DVBSTAT2		Status byte 2.
	1...	Backup mode.
	.1..	I/O error lock.
	..1.	3270 print in progress, 2740-2 suppress RECMS, 2770 delayed RVI.
	...1	Inquiry mode-2770.
	.... 1...	Suppress response to host.
	.... .1..	A noncompetitive Invite exists. When the line or device was deactivated, an Invite remained for this device.
	.... ..1.	Logical error lock.
	1	Selective text return.
76(4C) DVBDMF	Byte 0	Device mode flags.
	1...	Activate monitor mode out of session
	.1..	Override write text mode ERPs.
	..1.	Reject leading graphic (write operations).
	...1	EIB deletion (non-transparent only).
	.... 1...	Process reset conditional as low priority.
	.... .1..	Inhibit time fill/inhibit WACK limit.
	.... ..1.	Embedded line control (non-transparent)/intermediate control character insertion.
	1	Critical text.
	Byte 1	
	1...	TWX-suppress prompting
	.1..	Override read text mode ERPs.
	..1.	Reject leading graphics (read operations).
	...1	EIB inspection/inhibit text timeout.
	.... 1...	Sub-blocking (input).
	.... .1..	Interrupt enabled.
	.... ..1.	Activate monitor mask.
	1	Not auto deactivate monitor mode.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
79(4F)		Status byte 3.
DVBSTAT3	1...	Remember RVI sent.
	.1..	Pseudo suppress response to host.
	..1.	Send SESSEND to SSCP.
	...1	Suppress error response.
	.... 1...	Send unsolicited response to primary LU.
	.... .1..	Session trace for all resources.
	.... ..1.	Session trace for a specific resource.

EVENT CONTROL BLOCK ECB

Program: NCP

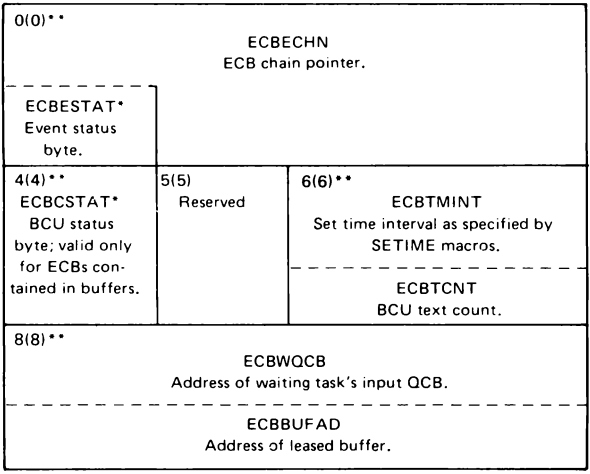
Size in bytes: 12(C)

Located in: Dynamically allocated BCU/PIU buffer or as a permament control block in storage.

Created by: NCP generation or dynamically as part of first buffer in a BCU.

Pointer to ECB: None

Function: To control BCU status or event status of an associated block.



*Indicates a byte expansion follows.

**See block control unit for labels used in the first buffer of a BCU.

Notes:

1. ECBWQCB must have the same displacement in the ECB as UxECHN has in the PIU, BCUECHN has in the BCU, and XYZLINK has in the QCB.
2. ECBESTAT must be zeroed by ECBINIT whenever any SUPV function is used against that ECB; for example, ENQUE, INSERT, etc.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) ECBESTAT		Event status byte.
	1...	Event satisfied.
	.1..	Task ready to be dispatched.
	..1.	Supervisor link.
	...1	ECB enqueued bit.
	x	1=Stop sending after this BTU. 0=No need to stop sending.
4(4) ECBCSTAT		Buffer status byte.
	1...	Buffer enqueued.
	..00 00..	Lowest priority
	..11 11..	Highest priority.

EBCDIC CHARACTER DECODE DISPLACEMENT TABLE — ECDDT

Program: NCP, EP

Size in bytes: 64(40)

Located in: Module CYKBL, CYKTST/CYLBL, CYLTST

Created by: NCP or EP generation.

Updated by: N/A

Referenced by: CYATAPH0, CYARAPH0, CYKTST, CYLTST

Function: Provides offset into branch table for proper control character processing.

0(0)–63(3F)
EBCXMTBT (CYAEBCT) Displacement data.

EP INITIALIZATION TABLE

EPINITAB
(EP, PEP)

Program: EP, PEP

Size in bytes: 12(C)

Located in: End of module CYKSTART/CYLSTART

Function: Contains control information used during IPL.

0(0)	1(1)	2(2)
EPIMSTAT* State indicator for MOSS communication.	EPIFUNC Function indicator for line initialization.	EPIABNCD Current abend code.
4(4) EPIL2K Starting address of last 2K block of storage.		
8(8) EPIMSTOR Maximum storage installed.		

* Indicates that a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) EPIMSTAT	0000 0000	Inactive state.
	1...	Response pending.
	.1..	MOSS request CDS information response.
	..1.	MOSS initialization complete.
	...1	MOSS control program parameters response.
	.... 1...	Request pending.
	.... ..1.	Control program parameter saved request.
	1	MOSS CDS information available.

EVENT QUEUE BLOCK — EQB

Program: NCP

Size in bytes: 16(10)

Created by: NCP generation.

Pointer to: None.

Function: Contains two chains, one for the slowdown event chain and other for the CWALL event chain.

0(0)	EQBSCHPF First ACHAIN element pointer of slowdown event chain
4(4)	EQBSCHPL Last ACHAIN element pointer of slowdown event chain
8(8)	EQBCCHPF First ACHAIN element pointer of CWALL event chain
12(C)	EQBCCHPL Last ACHAIN element pointer of CWALL event chain

EXPLICIT ROUTE BROADCAST QUEUE ERB

Program: NCP

Size in bytes: 24(18)

Created by: NCP generation.

Pointed to by: CXQERB in the link-edit map.

Function: The explicit route broadcast processor (CXDBERB) enqueues NC.ER.OP and NC.ER.INOP PIUs to the ERB queue to be broadcast to adjacent PU types 4 and 5.

Format: Standard input QCB.
Task – CXDBERB
Priority – Appendage
Reentrant – No

EXPLICIT ROUTE EXTENSION ERX

Program: NCP

Size in bytes: 6(6) plus the maximum number of subareas in the network.

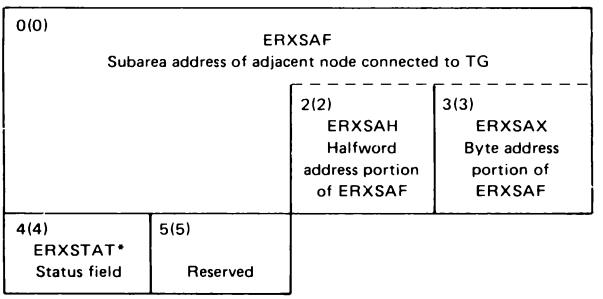
Created by: NCP generation.

Pointer to ERX: The ERX is part of the TGB.

Function: Contains the explicit route (ER) information related to a transmission group (TG). The ERX is located within a TGB (see transmission group block). The network subarea address of the adjacent node on the other end of the TG is contained in the ERX. The ER status of the TG is also in the ERX.

A subareas serviced table (SST) is part of the ERX as well. The SST is a vector of one-byte elements that correspond to the network subarea address. The first element in the SST is always zero since subarea 00 is an invalid network subarea address. Each nonzero entry in the SST corresponds to a subarea that is serviced by the TGB. The TGB is used to route towards the subarea corresponding to the SST entry. Only the explicit routes indicated by the SST entry are serviced by the TGB.

Explicit Route Extension Base



*Byte expansion follows.

Explicit Route Extension Subareas Serviced Table

		6(6) ERXSST Always X'00'	7(7) Mask of explicit routes for subarea 1
8(8) Mask of explicit routes for subarea 2	9(9) Mask of explicit routes for subarea 3		5 + n Mask of explicit routes for subarea n

n = maximum number of subareas in the network.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) ERXSTAT	x. . .	Status field 1 — ER OP was the last PIU sent for this TG. 0 — ER INOP was last PIU sent, (or nothing has been sent for this TG).

MULTILINK TG (FAT LINK) CONTROL BLOCK FLB

Program: NCP

Size in bytes: 66(42)

Created by: NCP generation.

Pointer to: SYSFLBP field in HWX + 56(38) or the TGBDLCP field in TGB + 16(10).

Function: Controls traffic on multilink transmission groups.

<table>
<tr><td colspan="4">0(0)
FLBRQCB
Multilink TG resequence QCB
(Received PIUs for resequencing)</td></tr>
<tr><td colspan="4">FLBSQCB
Special PIU (FIDF)
(Pseudo input)</td></tr>
<tr><td colspan="4">24(18)
FLBXQCB
Multilink TG QCB (WORKQ)
(Transmit queue)</td></tr>
<tr><td>40(28)
FLBSOC
Station operative count</td><td colspan="3">41(29)
FLBTGBP
Pointer to the TGB</td></tr>
<tr><td>44(2C)
FLBSCC
Station committed count</td><td colspan="3">45(2D)
FLBSCBP
Pointer to the first SCB or to the next FLB in the free pool.</td></tr>
<tr><td colspan="2">48(30)
FLBMTS
Maximum transfer size</td><td>50(32)
FLBSTF*
State flags for multilink TG (byte 1)</td><td>51(33)
FLBSRC
Station ready count</td></tr>
<tr><td colspan="2">52(34)
FLBNRO
Next sequence number for outbound PIUs</td><td colspan="2">54(36)
FLBNRI*
Next expected sequence number from inbound PIUs.</td></tr>
</table>

*Indicates that a byte expansion follows.

56(38) Reserved	57(39) FLBQPC Queue priority counter	58(3A) FLBUNAC Unacknowledged PIU counter
60(3C) FLBSRSN Special PIU sequence number		62(3E) FLBSPE Next expected special PIU sequence number
64(40) FLBAGAC Aging algorithm count	65(41) FLBSTFC* State flags for multilink TG (byte 2)	

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
50(32) FLBSTF		State flags for multilink TG (byte 1).
	..1.	Sweep mode.
	...1	Special PIU (FIDF) expected. Note: See also FLBSTFC
54(36) FLBNRI		
	...1 xxxx Byte 1	Rollover
	xxxx xxxx	x=Expected number received.
65(41) FLBSTFC		State flags for multilink TG (byte 2)
	.1..	Out of sequence. Note: See also FLBSTF

FUNCTION MANAGEMENT TABLE FMT

Program: NCP

Size in bytes: 4(4) per entry; total size of table is variable.

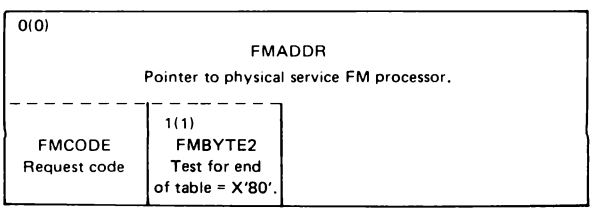
Created by: NCP generation — $LVL5

Located in: CXDKFMR (Physical Services Function Management Router).

Pointer to FMT: None. See link-edit map.

Function: DSECT to entries in tables that are used to locate processors for NCP routers. These tables include:

- CXTCFL — locates processors for requests associated with link configuration.
- CXTCFN — locates processors for requests associated with the NCP.
- CXTCFS — locates processors for requests associated with stations.
- CXTCLL — locates processors for requests associated with logical units.
- CXTMAL — locates processors for requests associated with link maintenance.
- CXTMAA — locates maintenance-services processors for requests associated with SNA stations.
- CXTMAN — locates maintenance processors for requests associated with the NCP.
- CXTMAS — locates maintenance processors for requests associated with stations.
- CXTMLL — locates maintenance processors for requests associated with logical units.
- CXTNSL — locates processors for requests associated with BSC/start-stop lines.
- CXTNSD — locates processors for requests associated with BSC/start-stop devices.



FUNCTION VECTOR TABLE FVT

Program: NCP

Size in bytes: Variable

Created by: NCP generation.

Pointer to FVT: NLBFVT field in NLB, NLXFVT field in NLX, NPBFVT field in NPB, NLBFVT field in VLB

Function: Contains a list of all tasks that can be associated with each programmed resource.

0(0) Index code X'01'	1(1) Pointer to task that initializes the programmed resource.
4(4) Index code X'02'	5(5) Pointer to notify task.
8(8)-n Index codes and pointers to additional user defined tasks.	
n + 4 X'00'	n + 5 Pointer to next FVT in chain (all zeros if this is the last FVT in the chain).

Index codes X'03' through X'09' are reserved for NCP.

GROUP CONTROL BLOCK GCB

Program: NCP

Size in bytes: 109(6D)

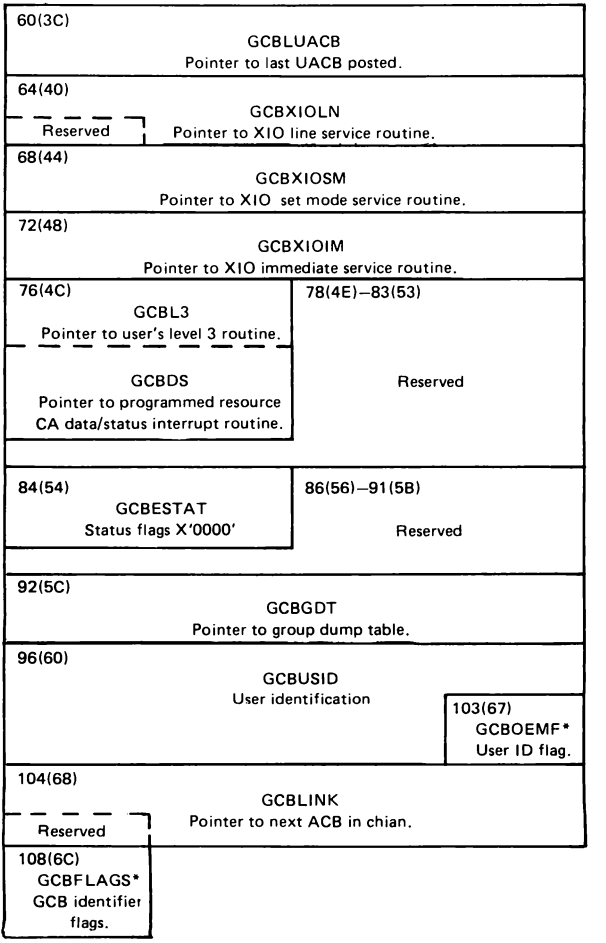
Created by: NCP generation.

Pointer to GCB: UACBGCBP field in UACB, PSAACPB field in PSA.

Function: Contains information relative to a group of user-written line control lines.

<table>
<tr><td colspan="2">(0)0
GCBL1ERP
Pointer to programmed resource CA level 1 ERP routine.</td></tr>
<tr><td colspan="2">4(4)
GCBERR
Pointer to timer error routine.</td></tr>
<tr><td colspan="2">GCBRESET
Pointer to programmed resource CA system reset routine.</td></tr>
<tr><td colspan="2">8(8)
GCBSTAP
Pointer to timer shoulder tap routine.</td></tr>
<tr><td colspan="2">12(C)
GCBLAGST
Pointer to lagging shoulder tap routine.</td></tr>
<tr><td colspan="2">GCBSCAN
Pointer to programmed resource CA queue scan routine.</td></tr>
<tr><td colspan="2">16(10)
GCBXIOLK
Pointer to XIO SDLC link service routine</td></tr>
<tr><td colspan="2">20(14)–35(23)
Reserved</td></tr>
<tr><td>36(24)
GCBL2
Pointer to user's level 2 interrupt handler.</td><td rowspan="2">38(26)–51(33)
Reserved</td></tr>
<tr><td>GCBIS
Pointer to programmed resource CA initial select interrupt routine.</td></tr>
<tr><td colspan="2">52(34)
GCB1UACB
Pointer to first UACB posted.</td></tr>
<tr><td>56(38)
Reserved</td><td>58(3A)
GCBEND1
Used only by level 2 router.</td></tr>
</table>

GCB



*Indicates a byte expansion follows.

Note: GCBL2, GCBLINK, GCBTIME, GCBBAR, GCBEND1, GCBFLAGS, GCBL3, and GCBESTAT must be at the same displacements in the GCB as their counterparts in the ACB.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
103(67) GCBOEMF		User ID flag.
	1.	User ID specified no RECMS.
	. . . . . 1 . .	RECMS not generated by NCP 7X RECMS.
	. . . . . 1 .	RECMS 8X changed into 7X user formatted dump.
	 1	User formatted dump.
108(6C) GCBFLAGS		GCB identifier flags.
	. . 1	GCB is on the L2 to L3 CICP queue.
	. . . . . x .	1=User-written line control. 0=IBM-supported line control (CCB). Must be 1 in a UACB or GCB.
	 10	Identifies block as GCB.
	 11	Identifies block as UACB.

GENERALIZED PIU TRACE GPT

Program: NCP

Size in bytes: 92(5C)

Created by: NCP generation.

Pointer to GPT: SYSGPTP field in the HWE

Function: Contains parameters necessary to control the generalized PIU trace.

0(0) GPTFLAG* GPT flag byte	GPTHBF Pointer to the GPT head buffer.	
4(4) GPTVRC Count of PIUs on the VR QCB	GPTCBF Pointer to the GPT current buffer.	
8(8) GPTRCBO RCB offset	GPTNFB Pointer to the next available byte in the current buffer.	
12(C) GPTRTYP* Status entry source type.	13(D) Reserved	14(E) GPTLNK Save area for link network address.
16(10) GPTCLUS Save area for cluster network address.		18(12) GPTRSE Save area for resource network address
20(14) GPTSNA Network address of tracing SSCP.		22(16) GPTCNT Count of resources being traced.
24(18) GPTVRB Pointer to the VR control block that is associated with the activating SSCP.		
28(1C) GPTPIU Pointer to the RECTRD PIU save buffer.		

GPT VR Held Input QCB (GPVQCB)

32(20) GPVMCBD Major control block displacement divided by 2.	GPV1ECB Pointer to first element queued.

*Indicates a byte expansion follows.

36(24) GPVLECB Pointer to last element queued.		
40(28) GPVPRKEY Protection key.	GPVLINK Pointer to next QCB on the queue.	
44(2C) GPVSTAT Task and queue status.	GPVTSKEP Task entry point.	
48(30) GPVSAVE Address of save area pushdown list.		
GPVSCHED Task dispatching priority.	49(31) GPVSTATP Prelease flags.	50(32) GPVPREL Prelease buffer count.
52(34) GPVBHSCH BHR scheduling bits.	GPVLUNK Pointer to previous QCB on the queue.	

GPT Slowdown Input QCB (GPSQCB)

56(38) GPSMCBD Major control block displacement divided by 2.	GPS1ECB Pointer to first elelment queued
60(3C) GPSLECB Pointer to last element queued.	
64(40) GPSPRKEY Protection key.	GPSLINK Pointer to next QCB on the queue.

68(44)		
GPSSTAT Task and queue status.	GPSTSKEP Task entry point.	
72(48)		
GPSSAVE Address of save area pushdown list.		
GPSSCHED Task dispatching priority.	73(49) GPSSTATP Prelease flags.	74(4A) GPSPREL Prelease buffer count.
76(4C)		
GPSBHSCH BHR scheduling bits.	GPSLUNK Pointer to previous QCB on the queue.	

Event Control Block for BFREVENT Control (GPTECB)
(See ECB for all bit definitions)

80(50)		
GPTESTAT Event status byte.	GPTECHN ECB chain pointer.	
84(54) GPTCSTAT GPT status byte.	85(55) Reserved	86(56) GPTTMINT Set time interval as specified by SETIME macro. GPTTCNT BCU text count.
88(58)		
GPTWQCB Address of waiting task's input QCB.		

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) GPTFLAG	1.	GPT flag byte. GPT global active.
	.1	Status trace entry pending for ACTTRACE ALL command.
	. .1	GPT suspended.
	. . .1	GPT undergoing ANS.
	. . . . 1. . .	GPT BFREVENT active.
	. . . . .1 . .	GPT VREVENT active.
12(C) GPTRTYP	x.	Status entry source type. 1=Status entry.
		0=Data entry.
	 xxxx	Resource type. 1111=NCP physical services. 0001=PU-CUB (SNA PU). 0010=PU-DVB (3270 cluster). 0011=PU-NPB (User defined). 0101=LU-LUB (SNA LU). 0110=LU-DVB (3270 head). 0111=LU-NLB (User defined). 1001=Line-LKB (SDLC). 1010=Line-LCB (3270). 1011=Line-VLB (User defined).

EXTENDED HALFWORD DIRECT ADDRESSABLES HWE

Program: NCP, EP, PEP

Size in bytes: 128(80)

Created by: NCP generation.

Pointer to HWE: SYSW6 field in XDA (X'07D8').

Function: Contains frequently accessed system halfword control fields.

Index

Name	Offset	Name	Offset	Name	Offset
DCTAQCB	112(70)	SYSDRSP	10(A)	SYSPCBP	36(24)
DCTSPOOL	116(74)	SYSEBCP	14(E)	SYSPDBP	12(C)
SYSABNP	56(38)	SYSEQBP	88(58)	SYSPSBP	68(44)
SYSAQCB	112(70)	SYSERTP	32(20)	SYSSITP	72(48)
SYSATBP	4(4)	SYSFQXP	20(14)	SYSSPOOL	116(74)
SYSBPBP	84(54)				
SYSBPQBC	2(2)	SYSLCSP	18(12)	SYSSVTP	76(4C)
SYSBUFCT	0(0)	SYSLTBP	92(5C)	SYSTMRP	40(28)
SYSCAB	24(18)	SYSLTSP	52(34)	SYSTRTP	80(50)
SYSCERP	104(68)	SYSMITP	120(78)	SYSTVSP	16(10)
SYSCHVTP	48(30)	SYSMVTP	124(7C)	SYSXBRK	50(32)
SYSCKRP	28(1C)	SYSNIQP	44(2C)		

0(0) SYSBUFCT Initial free buffer count.	2(2) SYSBPQBC Exit slowdown threshold count.
4(4) SYSATBP Address trace block pointer.	
8(8) Reserved	10(A) SYSDRSP Display/refresh/select table pointer.
12(C) SYSPDBP Panel control block pointer.	14(E) SYSEBCP EBCDIC time and date control block pointer.
16(10) SYSTVSP Time value select table pointer.	18(12) SYSLCSP Line control selection table pointer.

20(14) SYSFQXP FM request transporter QCB pointer.		
24(18) SYSCAB Pointer to highest numbered CAB that was generated in system.		
28(1C) SYSCKRP Pointer to the check record pool (CRP).		
32(20) Reserved		
36(24) SYSPCBP Panel queue pointer.		
40(28) SYSTMRP Timer completion queue pointer.		
44(2C) SYSNIQP Non-device input queue pointer.		
48(30) SYSCHVTP Pointer to PEP channel vector table.	50(32) SYSXBRK Number of break characters (SS).	51(33) Reserved
52(34) SYSLTSP Pointer to the line test control block (LTS).		
56(38) SYSABNP Pointer to abend control block (ABN).		
60(3C)–67(43) Reserved		
68(44) SYSPSBP Pointer to the physical services control block.		
72(48) SYSSITP Pointer to the subarea index table.		
76(4C) SYSSVTP Pointer to the subarea vector table.		

80(50)	SYSTRTP Pointer to transit routing table.
84(54)	SYSBPBP Pointer to buffer pool block.
88(58)	SYSEQBP Pointer to event queue block.
92(5C)	SYSLTBP Pointer to line trace vector table (LTVT).
96(60)	Reserved
100(64)	SYSNQBP Pointer to NPA counter queue (NQB) for NPA data collection.
104(68)	SYSCERP Pointer to CA ERP control block vector table (CERVT).
108(6C)	SYSGPTP Pointer to generalized PIU trace control block (GPT).
112(70)	DCTAQCB (SYSAQCB) System active queue control block.
116(74)	DCTSPOOL (SYSSPOOL) Pointer to first buffer in system savearea pool.
120(78)	SYSMITP Pointer to the migration index table (MIT).
124(7C)	SYSMVTP Pointer to the migration vector table (MVT)

EXTENSION OF HWE — HWX

Program: NCP

Size in bytes: 112(70)

Created by: NCP generation. (Generated directly following HWE.)

Pointer to HWX: SYSW7 (SYSHWX) field in XDA (X'07DC').

Function: Contains frequently accessed system control fields.

Index

Name	Offset	Name	Offset	Name	Offset
SYSCNVT0	96(60)	SYSLAB2P	8(8)	SYSSV4P	76(4C)
SYSCNVT1	100(64)	SYSPABP	0(0)	SYSSV5P	80(50)
SYSCRBP	52(34)	SYSPMF	20(14)	SYSUCVT0	104(68)
SYSDPTP	48(30)	SYSSV1P	64(40)	SYSUCVT1	108(6C)
SYSDRXP	12(C)	SYSSV2P	68(44)	SYSVATP	32(20)
SYSDSPP	44(2C)	SYSSV3P	72(48)	SYSVITP	28(1C)
SYSFLBP	56(38)	SYSSV4A	88(58)	SYSVSTP	36(24)
SYSINVP	16(10)	SYSSV4L	84(54)	SYSVVTP	40(28)
SYSLAB1P	4(4)				

0(0)
SYSPABP
Dynamic reconfiguration (DR) pointer to physical unit anchor block.

4(4)
SYSLAB1P
DR pointer to logical unit anchor block type 1.

8(8)
SYSLAB2P
DR pointer to logical unit anchor block type 2.

12(C)
SYSDRXP
DR pointer to dynamic reconfiguration extension control block.

16(10)
SYSINVP
DR pointer to invalid LUB.

20(14)
SYSPMF
Pointer to performance measurement facility control block (PMF).

24(18)	Reserved
28(1C)	SYSVITP Pointer to virtual route subarea index table.
32(20)	SYSVATP Pointer to virtual route access table.
36(24)	SYSVSTP Pointer to virtual route status table.
40(28)	SYSVVTP Pointer to virtual route vector table.
44(2C)	SYSDSPP Pointer to dispatch table.
48(30)	SYSDPTP Pointer to dispatch priority table.
52(34)	SYSCRBP Pointer to COMMIT request block.
56(38)	SYSFLBP Pointer to pool of multilink TG control blocks.
60(3C)	Reserved
64(40)	SYSSV1P Pointer to level 1 savearea (CXTSV1).
68(44)	SYSSV2P Pointer to level 2 savearea (CXTSV2)
72(48)	SYSSV3P Pointer to level 3 savearea (CXTSV3).

76(4C)	SYSSV4P Pointer to level 4 savearea (CXTSV4).
80(50)	SYSSV5P Pointer to level 5 savearea (CXTSV5).
84(54)	SYSSV4L Pointer to level 4 savearea (CXTSV4) during Lease processing.
88(58)	SYSSV4A Pointer to SVC service-routine level 4 savearea (CXTS4A).
92(5C)	Reserved
96(60)	SYSCNVT0 Pointer to GCB entries Channel adapter 0 CNVT
100(64)	SYSCNVT1 Pointer to GCB entries Channel adapter 1 CNVT
104(68)	SYSUCVT0 Pointer to UCCB entries Channel adapter 0 UCNVT
108(6C)	SYSUCVT1 Pointer to UCCB entries Channel adapter 1 UCNVT

Program: EP, PEP

Size in bytes: 160(A0).

Located in: Routine CYAIS of module CYKSVC/CYLSVC

Created by: NCP or EP generation.

Referenced by: Routine CYAIS of module CYKSVC/CYLSVC

Function: Points to initial command execution (ICE) routines for command processing.

For BSC/SS lines

0(0)—4(4)	ICE address
8(8)	Address pointer to Write. (BSC) (CYACWRIB)
12(C)	Address pointer to Write. (Start-stop) (CYACWRIS)
16(10)	Address pointer to Read. (BSC) (CYACREAB)
20(14)	Address pointer to Read. (Start-stop) (CYACREAS)
24(18)—28(1C)	Address pointers (2) to No-op. (general) (CYACENOP)
32(20)—36(24)	Address pointers (2) to Sense. (general) (ICESEN)
40(28)—44(2C)	Address pointers (2) to Wrap. (general) (ICEWRA)
48(30)	Address pointer to Prepare. (BSC) (CYACPREB)
52(34)	Address pointer to Prepare. (Start-stop) (CYACPRES)

56(38)–60(3C)	Address pointers (2) to invalid code. (CMDERROR)
64(40)	Address pointer to invalid code. (CMDERROR)
68(44)	Address pointer to Write Break. (2848 Start-stop) (CYACBRES)
72(48)	Address pointer to Poll (BSC) (CYACPOLB)
76(4C)	Address pointer to Poll. (Start-stop) (CYACWRIS)
80(50)	Address pointer to invalid code. (CMDERROR)
84(54)	Address pointer to Inhibit. (Start-stop) (CYACREAS)
88(58)	Address pointer to invalid code. (CMDERROR)
92(5C)	Address pointer to Poll SOH. (2260 start-stop) (CYACPOLS)
96(60)	Address pointer to invalid code. (CMDERROR)
100(64)	Address pointer to Read Clear. (2848 start-stop) (CYACRDCL)
104(68)	Address pointer to invalid code. (CMDERROR)
108(6C)	Address pointer to Break or Diagnostic Poll. (Start-stop) (CYACBKPL)
112(70)	Address pointer to Search. (BSC) (CYACSEAB)
116(74)	Address pointer to Search. (Start-stop) (CYACSEAS)
120(78)	Address pointer to Disable. (BSC) (ICEDISAB)

124(7C)	Address pointer to Disable. (Start-stop) (ICEDISAB)
128(80)	Address pointer to Enable. (BSC) (ICEENABL)
132(84)	Address pointer to Enable. (Start-stop) (ICEENABL)
136(88)	Address pointer to Dial. (BSC) (ICEDIAL)
140(8C)	Address pointer to Dial. (Start-stop) (ICEDIAL)
144(90)	Address pointer to Adprep. (BSC) (CYACADPB)
148(94)	Address pointer to invalid code. (CMDERROR)
152(98)	Address pointer to Set Mode. (BSC) (CYACSETB)
156(9C)	Address pointer to invalid code. (CMDERROR)

INTERFACE DISCONNECT DISPATCHER TABLE — IDDT (EP, PEP)

Program: EP, PEP

Size in bytes: 84(54)

Located in: Routine CYAEC100 of module CYLSVC/CYKSVC.

Created by: NCP and EP generation.

Referenced by: Routine CYAIS.

Function: Contains address pointers to IFD and CAEC routines.

0(0)–83(53) IFDADDR IFD address table
0(0) No action, TIO (00) command. (CAEC190)
4(4) Address pointer for Write (08) command. (IFDWRI)
8(8) Address pointer for Read (10) command (IFDREA)
12(C) No action. No-op (18) command. (CAEC190)
16(10) Address pointer for sense (20) command. (CAEC190)
20(14) No action. Wrap (28) command. (CAEC190)
24(18) Address pointer for Prepare (30) command. (IFDPRE)
28(1C) Error (38)
32(20) Address pointer for Write Break (40) command. (IFDWRI).

36(24) Address pointer for Poll (48) command. (IFDWRI)
40(28) Address pointer for Inhibit (50) command. (IFDREA)
44(2C) Address pointer for Poll SOH (58) command. (IFDWRI)
48(30) Address pointer for Read Clear (60) command. (IFDREA)
52(34) Address pointer for Break (68) command. (IFDWRI)
56(38) Address pointer for Search (70) command. (IFDREA)
60(3C) Address pointer for Disable (78) command. (CAEC190)
64(40) Address pointer for Enable (80) command. (IFDENA)
68(44) Address pointer for Dial (88) command. (IFDIAL)
72(48) Address pointer for Address Prepare (90) command. (IFDPRE)
76(4C) Address pointer for Set Mode (98) command. (IFDSTMD)
80(50) Address pointer for Sense ID (A0) command. (CAEC190)

Program: NCP

Size in bytes: Variable

Created by: NCP generation.

Pointer to IDE: None. Follows IDL.

Function: Contains one entry for each valid ID that can be received over a line or lines for which the list is being used.

The IDE has the following format if device association is not possible:

0(0)	1(1)	2(2)
IDELEN ID length	IDEFLAG* Entry flags.	ID characters. (Variable length.)
**		
IDEPADL Length of maximum number of pad characters needed for alignment.		

The IDE has the following format if device association is possible:

0(0)	1(1)	2(2)
IDELEN ID length	IDEFLAG* Entry flags.	Reserved
4(4)		
IDEDVBP Pointer to DVB		
8(8)		
ID characters. (Variable length.)		
**		
IDEPADL Length of maximum number of pad characters needed for alignment.		

*Indicates a byte expansion follows.
**Follows ID characters.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
1(1) IDEFLAG		Entry flags.
	1. . .	Device association is possible for this entry.
	.1 . .	End of list.
	. .1 .	Notify host if no match. (Meaningful only for first and last entries of list.)

IDENTIFICATION LIST HEADER IDL

Program: NCP

Size in bytes: 4(4)

Located in: Beginning of identification list.

Created by: NCP generation.

Pointer to IDL: CIEIDL field in CIE.

Function: Precedes the first entry in an ID list for switched BSC lines whose terminals identify themselves. The list is required only if validity checking of the incoming ID is required.

0(0) IDLSIZE Maximum number of bytes in the list.	2(2) Halfword to force fullword alignment for first entry.

INPUT/OUTPUT BLOCK IOB

Program: NCP

Size in bytes: 36(24)

Located in: ACB

Created by: NCP generation.

Pointer to IOB: LCBACBP field in LCB.

Function: Contains status of BSC/SS input/output operations.

<table>
<tr><td>0(0)
IOBIMCTL*
Immediate control flags.</td><td>1(1)
IOBCMAND*
I/O command field.</td><td colspan="2">2(2)
IOBCMODS*
IOB command modifiers.</td></tr>
<tr><td colspan="2" rowspan="3">4(4)
IOBSTAT*
Outcome of command operation.</td><td colspan="2">6(6)
IOBERST
First error status. This field is set equal to IOBSTAT when the first recoverable error occurs.</td></tr>
<tr><td colspan="2">IOBSTATR
Receive leg status (Wrap)</td></tr>
<tr><td colspan="2">IOBLTSM
Transmit leg status (Wrap)</td></tr>
<tr><td>8(8)
IOBEREST
First error extended status. This field is set equal to IOBEXTST when the first recoverable error occurs.</td><td>9(9)
IOBRTYCT
Retry count for first level ERP attempts.</td><td colspan="2">10(A)
IOBBKSIZ
Received block's size (number of data characters stored).</td></tr>
<tr><td colspan="4">12(C)
IOBDATAP
Data pointer to first buffer in the block.</td></tr>
<tr><td>IOBEXTST*
Extended status field. Contains error indicators.</td><td colspan="3"></td></tr>
</table>

*Indicates a byte expansion follows.

16(10)

IOBINPUT

Input control data address. Contains the address of the first buffer when buffers are needed to store a reply to text, selection, or inquiry.

IOBRDESC Record descriptor byte.	

20(14)

IOBOUTPT

Output control data address. Contains the address of inserted data.

IOBCTCCT Control count. Number of characters to be transmitted from field addressed by the output control data address.	21(15) Address of the field to be transmitted.

24(18)

IOBLCB

Pointer to the line control block.

IOBSTOFS Initial data offset, used to locate the starting point in the first buffer of a block.	

28(1C)

IOBFNLPT

Pointer to last buffer in chain.

IOBOFSET Final data offset used to locate the buffer position of the last character in the block that was stored. Zero if buffer is filled.		IOBWRPCT Wrap data count.
32(20) Reserved	33(21) IOBPFLAG* PEP flag field.	34(22) Reserved

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) IOBIMCTL		Immediate control flags.
	1... ...0	Reset Immediate
	1... ...1	Reset Immediate - soft reset
	.1..	Write request - conditional reset.
	..1.	Monitor mode.
	...1	Send interrupt.
	.... 1...	Conditional send interrupt.
1(1) IOBCMAND		I/O command field.
	X'00'	No I/O occurred.
	X'10'	Write initial.
	X'12'	Write continue.
	X'16'	Write recover.
	X'17'	Write delay.
	X'19'	Write.
	X'25'	Read.
	X'27'	Read delay.
	X'28'	Read initial.
	X'2A'	Read continue.
	X'40'	Run Link Problem Determination Aid (LPDA) test.
	X'83'	Disable.
	X'85'	PEP switch.
	X'87'	Wrap.
	X'8D'	Enable.
	X'8F'	Dial.
	X'94'	Write EOT.
	X'9B'	Write control.
	X'AC'	Read status.
2(2) IOBCMODS		IOB Command Modifiers.
	Byte 0	
	1...	Suppress lost data.
	.1..	Override text mode ERPs.
	..1.	Reject received leading graphics.
	...1	Inhibit text time-out (start-stop). ITB mode not transparent (BSC).
	.... x...	1=Sub-blocking mode, or Modem leads wrap 0=Wrap data.
	.... .x..	1=Inhibit WACK limit (BSC), or Inhibit time fill (start-stop), or External wrap 0=LIC level wrap.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
2(2) IOBCMODS (continued)	. . . . . .x .	1=Enable length check, or 1=ITB mode transparent, or 1=Modem 0=Cable.
	x	1=Hold buffers, or 1=Fixed number of wraps 0=Continuous wrap.
	Byte 1	
	1.	Reset.
	.1	Send priority, or Manual dial (Enable cmd only), or Start wrap request from MOSS.
	. .1	ETX (Write commands), or Single poll (Read commands), or Stop Wrap request from MOSS.
	. . .1	Offset (Write commands), or First buffer assigned (Read commands), or Stop Wrap request from NCP.
	. . . . 1. . .	Insert (Write commands), or Send leading graphics (Read commands), or Send identification (Enable), or Wrap Continuous request from MOSS.
	. . . . .1. .	Transparent text (Write commands). Send positive ACK (Read commands). Identification mode (Enable).
	. . . . . .1.	Set negative ACK (Read commands). SOH (Write commands). Multiple terminal access mode. (Enable commands.)
	1	Set alternate ACK.
4(4) IOBSTAT		Outcome of command operation.
	Byte 0 Flags	
	1.	Extended error status.
	.1 . .	Format exception (bad line control sequence).
	. .1 .	Sync check (stop bit error start-stop only).
	. . .1	Data check (block check character error).

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) IOBSTAT (continued)	1	Length check.
		Read/Write Group Masks
	.... 000.	No errors.
	.... 001.	Receive text.
	.... 010.	Receive text reply.
	.... 011.	Receive control; command reject.
	.... 100.	Status outstanding when command issued; command not executed.
	.... 101.	Send text reply.
	.... 110.	Send text.
	.... 111.	Send control.
		Data Set Control Group Masks
	.... 000.	No errors.
	.... 001.	Receive ID.
	.... 010.	Receive ID reply.
	.... 011.	Connect.
	.... 100.	Status outstanding when command issued.
	.... 101.	Error in dialing phase.
	.... 110.	Send ID.
	.... 111.	Disconnect.
	Byte 1	Extended (line) response. See Section 8.
12(C) IOBEXTST		Extended status field.
	1...	Overrun/underrun.
	.1..	Line quiet time-out.
	..1.	DLE format exception.
	...1	Sub-block error.
33(21) IOBPFLAG		PEP flag field.
	x...	Control block type: 0=NCP ACB 1=PEP CCB
	.x..	PEP switchable line: 0=Not switchable. 1=switchable.
	..x.	Line-active save bit. 0=Line inactive at time of switch. 1=Line active at time of switch.
	.... ..x.	Part of IOBSEL address.
	x	Part of IOBSEL address.

LOOKAHEAD BUFFER LAA

Program: NCP

Size in bytes: 22(16) for first command; 14(E) for succeeding commands.

Created by: CXDKLIP

Function: LAA is a DSECT of the PIU created and used by the OLT functions.

For First Command in Look-Ahead Buffer

<table>
<tr><td colspan="4">0(0)
LABUFCHN
Pointer to next buffer in this chain.</td></tr>
<tr><td colspan="2">4(4)
Reserved</td><td>6(6)
LAOFFSET
Offset to inter-pretive command.</td><td>7(7)
LAFLAGS
Flags for inter-pretive command.</td></tr>
<tr><td>8(8)
LACMD1
First inter-pretive command.</td><td>9(9)
LAWAIT1
Wait time for level 2 before ending com-mand as error.</td><td>10(A)
LASCFM1
Bits in SCF to test.</td><td>11(B)
LASCFE1
Expected status of tested SCF bits.</td></tr>
<tr><td colspan="2" rowspan="4">12(C)
LAERR1
Address for error processing.</td><td colspan="2">14(E)
LACNT1
Max. number of characters to place in buffer.</td></tr>
<tr><td colspan="2">LARCAC1
Adjusted receive count for Receive on Count command.</td></tr>
<tr><td>LATPCF1
PCF char. for transmit turn. (Transmit char. and Turn cmd.)</td><td>15(F)
LATPDF1
PDF char. for transmit turn. (Transmit char. and Turn cmd.)</td></tr>
<tr><td>LACOMP1
Char. compared with rev'd char. (Rev and Compare.)</td><td></td></tr>
</table>

<table>
<tr><td colspan="3">16(10)
LARCST1
Buffer pointer for a receive SDLC command.</td></tr>
<tr><td colspan="2">LASTAT1
Status of receive and compare command.</td><td>18(12)
LA2SCF1
SCF used when transmitting LA2PDF2
(Transmit on Count cmd.)</td><td>19(13)
LA2PDF1
2nd PDF char. transmitted after LA1PDF1.
(Transmit on Count cmd.)</td></tr>
<tr><td>LA1SCF1
SCF used when transmitting LA1PDF1.
(Transmit on Count cmd.)</td><td>17(11)
LA1PDF1
PDF char. transmitted at end of data.
(Transmit on Count cmd.)</td><td colspan="2"></td></tr>
<tr><td colspan="2">20(14)
LARCCT1
Count for a Receive on Count command.</td><td colspan="2"></td></tr>
</table>

For Succeeding Commands in Look-Ahead Buffer.

<table>
<tr><td>0(0)
LACMD
Succeeding interpretive command.</td><td>1(1)
LAWAIT
Wait time for level 2 before ending command as error.</td><td>2(2)
LASCFM
Bits in SCF to test.</td><td>3(3)
LASCFE
Expected status of tested SCF bits.</td></tr>
<tr><td colspan="2" rowspan="3">4(4)
LAERR
Address for error processing.</td><td colspan="2">6(6)
LACNT
Max. number of characters to place in buffer.</td></tr>
<tr><td>LATPCF
PCF char. for transmit turn.
(Transmit char. and Turn cmd.)</td><td>7(7)
LATPDF
PDF char. for transmit turn.
(Transmit char. and Turn cmd.)</td></tr>
<tr><td>LACOMP
Char. compared with rev'd char.
(Rev and Compare).</td><td></td></tr>
</table>

8(8) LASTART Pointer to receive buffer on receive and compare commands.			
LA1SCF SCF used when transmitting LA1PDF. (Transmit on Count cmd.)	9(9) LA1PDF PDF char. transmitted at end of data. (Transmit on Count cmd.)	10(A) LA2SCF SCF used when transmitting LA2PDF. (Transmit on Count cmd.)	11(B) LA2PDF 2nd PDF char. transmitted after LA1PDF.
12(C) LACOUNT Count for a Transmit on Count command.			

LU POOL ANCHOR BLOCK — LAB

Program: NCP

Size in bytes: 12(C)

Created by: CXTQAB stage 2 system generation macro.

Pointer to LAB: SYSLAB1P in HWX for PU type 1 and SYSLAB2P in HWX for PU type 2.

Function: Queue of LUBs in their respective dynamic reconfiguration pool.

LU Pool Anchor Block for PU Type 1

0(0) LABFIRST Pointer to first LUB on the queue.	
4(4) LABLAST Pointer to last LUB on the queue.	
8(8) Reserved	10(A) LABCNT Count of LUs on this queue.

LU Pool Anchor Block for PU Type 2

PU type 2 LAB is identical to and physically follows the PU type 1 LAB but is logically addressed separately.

Program: NCP

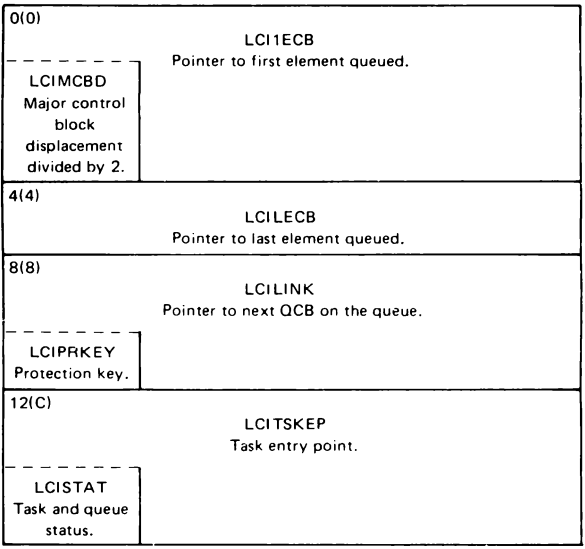
Size in bytes: Variable, depending on line-type extensions.

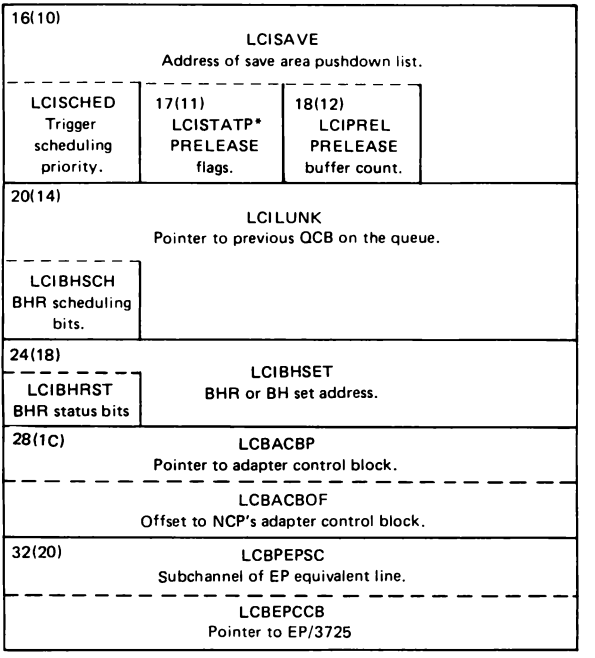
Created by: NCP generation, one for each BSC/SS line.

Pointer to LCB: RVTRP field in RVT.

Function: Contains fields required for (1) scheduling line operations, (2) maintaining line-significant status information, and (3) requesting I/O operations from the communications I/O program (levels 2 and 3).

Line I/O QCB (LCBLIOQ)
(See QCB for input queues for all bit definitions.)

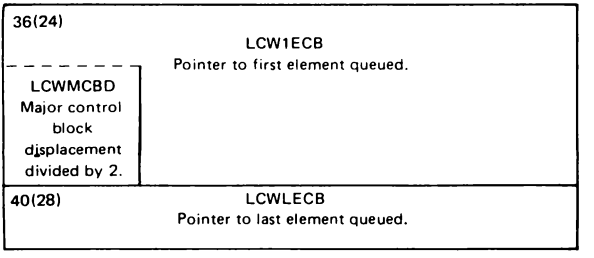




Line Work QCB (LCBLWQ)

(See QCB for Input Queues for all bit definitions.)

Note: By format, this is an Input QCB. Line Work QCB is simply the name given to this particular Input QCB.



*Indicates a byte expansion follows.

44(2C) LCWLINK Pointer to next QCB on the queue.			
LCWPRKEY Protection key.			
48(30) LCWTSKEP Task entry point.			
LCWSTAT Task and queue status.			
52(34) LCWSAVE Address of save area pushdown list.			
LCWSCHED Trigger scheduling priority.	53(35) LCWSTATP* PRELEASE flags.	54(36) LCWPREL PRELEASE buffer count.	
56(38) LCWLUNK Pointer to previous QCB on the queue.			
LCWBHSCH BHR scheduling bits.			

Logical Definition Section of LCB. (LCBLDEF).
Used by level 5 for line scheduling.

60(3C) LCBLTCTP Line type command table pointer.			
LCBLSTAT* First line status byte.			
64(40) LCBDVBP Pointer to device base for device currently connected over line.			
LCBTYPEC* Line type code.			
68(44) LCBMFLAG* LCB flags.	69(45) LCBSNPM SNP mask of SSCP that issued Activate Link.	70(46) LCBSST* Link subsystem type	71(47) LCBALARM Network Problem Determination Application (NPDA) alarm parameter.
LCBLLGN LLG number.			

*Indicates a byte expansion follows.

72(48) LCBSSP Subtask sequence pointer.		74(4A) LCBFEAT1* LCB features.	75(4B) LCBLST2* Second line status byte.
76(4C) LCBACTNS* Actions to be taken when unusual conditions arise on the line.	77(4D) LCBUSER Offset to beginning of user area.	78(4E) LCBERPL Second level error recovery procedure loop limit.	79(4F) LCBERPC Second level error recovery procedure loop counter.
80(50) LCBEDEL Duration of delay between second level ERP loops.	81(51) LCBCOFFL Sub-block cutoff limit.	82(52) LCBCOFFC Sub-block cutoff counter.	83(53) LCBIOCOM* I/O communication byte.
84(54) LCBCSCNT Count of pending Invite and Contact commands for the line.		86(56) LCBRID Resource ID of the line.	
88(58) LCBCBBP Pointer to committed buffers block.			

Multipoint Extension

Line Suspended Sessions QCB (LCBLSSQ)
(See QCB for work queues for all bit definitions.)

92(5C) LCSMCBD Major control block displacement divided by 2.	LCS1ECB Pointer to first element queued.
96(60) LCSLECB Pointer to last element queued	
100(64) LCSPRKEY Protection key.	LCSLINK Pointer to next QCB on the queue.
104(68) LCSSTAT Task and queue status.	105(69) Reserved

*Indicates a byte expansion follows.

<table>
<tr><td colspan="4">108(6C)
LCBESOTP
Address of service order table.</td></tr>
<tr><td>LCBEPAUS
Pause between passes through service order table.</td><td colspan="3"></td></tr>
<tr><td>112(70)
LCBENAKL
Negative poll response limit.</td><td>113(71)
LCBESERL
Service-seeking scan limit.</td><td>114(72)
LCBMS
Maximum number of sessions allowed.</td><td>115(73)
LCBAS
Attempted sessions count.</td></tr>
<tr><td>116(74)
LCBCS
Suspended connections count.</td><td>117(75)
LCBWS
Connections work count.</td><td>118(76)
LCBENOD
Number of devices on this line.</td><td>119(77)
LCBEDIG
Number of devices remaining when deactivating line.</td></tr>
<tr><td>120(78)
LCBSOTCT
BSC/SS devices in buffer delay not quiesced count for multipoint lines.</td><td>121(79)
LCBWFLGS*
Line work flags.</td><td colspan="2"></td></tr>
</table>

Switched Extension

<table>
<tr><td colspan="2">92(5C)
LCBESGTP
Address of primary switched group table (SGT).</td></tr>
<tr><td>LCBEFLAG*
Switched extension flags.</td><td></td></tr>
<tr><td colspan="2">96(60)
LCBELCDI
Address of logical connection device input (LCDI) DVB.</td></tr>
</table>

Nonswitched Point-to-Point Extension

<table>
<tr><td>92(5C)
LCBALT
Pointer to alternate-line LCB or to the switched group table.</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
17(11) LCISTATP		PRELEASE flags
	1. . .	Preleased triggered.
	.1.	Type of PRELEASE=Slow down.
	..1.	Type of PRELEASE=CWALL.
53(35) LCWSTATP		PRELEASE flags Same as LCISTATP
60(3C) LCBLSTAT		First line status byte.
	1. . .	Line active. A line is active (can accept TP commands) from the completion of an activate line operation until the receipt by line management of a deactivate line request. A line is inactive (cannot accept TP commands) from the receipt by line management of a deactivate line request until the completion of an activate line operation.
	.1. .	Line is in abnormal mode. A reset or deactivate is in progress for some device on this line. See LCBLST2 to determine actual operation.
	..1.	Active session.
	...1	Work scheduler idle.
	.... 1. . .	Service seeking in progress. Switched enable, for call-in, is active on this line.
	.... .1. .	Reset immediate or deactivate line halt caused an immediate XIO to be issued on this line. See LCBLST2 to determine actual terminal operation.
	.... ..1.	OLTT in progress.
	1	Wrap test in progress.
64(40) LCBTYPEC		Line type code.
	.1.	Extension exists.
	..1.	The meaning of this bit is relevant only if bit 7 (switched) is 1. If 1, this line changes physical characteristics, via set mode, with each new telephone connection. If 0, line has same characteristic for every connection.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	.... .1..	BSC line.
	.... ..1.	Multipoint line.
	1	Switched line.
68(44) LCBMFLAG		LCB flags.
	1...	Buffer delay wait.
	.1..	Critical situation message write started.
	..1.	LPDA supported on line.
	...1	LPDA test in progress.
	1...	LPDA test ended with errors.
	xx	LPDA retry counter.
70(46) LCBSST		Link subsystem type.
	X'00'	No link subsystem.
	X'01'	LPDA
74(4A) LCBFEAT1		LCB features.
	1...	Multipoint tributary.
	.1..	Point-to-point secondary.
	..1.	Dial type 1=Auto 0=Manual
	...1	Speed change capability.
	.... 1...	Multipoint backup.
	.... .1..	Resource eligible for NPA data collection.
	x	Mode switch 1=EP 0=NCP
75(4B) LCBLST2		Second line status byte.
	1...	Deactivate line halt in progress.
	.1..	Switch line mode in progress (EP or NCP).
	..1.	Activate line in progress.
	...x	Current dial method. 1=Auto 0=Manual
	.... 1...	Monitor mode in progress.
	.... .x..	Switched line mode bit 1=Backup 0=Normal
	..x.	Monitor reset bit 1=Delay monitor reset 0=Reset now
	...1	Line scheduler interlock.*

*Set to prevent any further activity while LPDA test or line-speed change are in progress.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
76(4C) LCBACTNS		Actions to be taken when unusual conditions arise on the line.
	1...	Shutdown of this line pending.
	.x..	Deactivate line orderly. (DLO) Error status (when active) 1=Error-terminate DLO 0=No error-process DLO
	..1.	Service suspended sessions.
	...1	Single service seek.
	.... 1...	Respond to current read with RVI.
	.... .x..	Negative poll response limit reached: 1=Break logical connection 0=No break
	.... ..x.	Negative poll response limit reached: 1=Reschedule Read 0=Terminate
	1	Monitor line for attention or disconnect.
83(53) LCBIOCOM		I/O communication byte.
	1...	Partial block sent.
	.1..	Session suspension required.
	..1.	Send ID.
	...1	Transparent text selection.
	.... 1...	End of text block (ETB) received.
	.... .1..	Conversational mode.
	.... ..1.	BHR point 2 execution required after I/O is completed.
	1	Last block ended with ETX.
92(5C) LCBEFLAG (switched extension)		Switched extension flags.
	1...	Part of a switched group.
	.1..	Call-in line.
	..1.	Call-out line.
	...1	Telephone connection exists.
121(79) LCBWFLGS		Line work flags
	1...	Clusters attached indicator.
	.1..	No work indicator.
	..1.	LPDA termination required.

LOST CONTROL POINT BLOCK — LCP

Program: NCP

Size in bytes: 28 (1C) plus prefix.

Created by: NCP generation.

Pointer to LCP: CXTLCP in link-edit map.

Function: Used for lost control point generation.

−8(−8)	CXTLCP Identifier.
0(0)	Lost control point process queue.*

*See the input QCB for field definitions. Priority is immediate. Task pointer is CXDALCP.

Program: NCP

Size in bytes: 16(10) per entry; number of entries defined at NCP generation.

Created by: NCP generation, one for each MTA start-stop line.

Pointer to LCST: SYSLCSP field in HWE or table of LCST pointers.

Function: Used to change CCB control fields for multiple terminal access (MTA).

Entry Format

0(0) LCSTSPED Line speed.		2(2) LCSTLGT Line group table address.	
4(4) LCSTRTDT Receive translate decode table address.		6(6) LCSTTTDT Transmit translate decode table address (high-order byte). The low-order byte is the character to be translated.	7(7) LCSTSMDE Set mode serial data (SDF) constant.
8(8) LCSTSTBL State table address.		10(A) LCSTRTRY Text error retry limit.	11(B) LCSTBCUT Buffer cutoff limit (receive).
12(C) LCSTCRTN Carriage return rate factor (SS only).	13(D) LCSTLSIZ Maximum print line size (SS only).	14(E) LCSTC Compare byte (TWX terminals only).	15(F) LCSTM Mask byte (TWX terminals only).

LINE GROUP TABLE

LGT
(EP, PEP)

Program: EP, PEP

Size in bytes: Variable (8 bytes per GROUP macro).

Created by: NCP or EP generation.

Located: Immediately following CCBs.

Pointer to LGT: CCBLGT field in CCB.

Referenced by: CYKNUC, CYLNUC, and CYKSL.

Function: Contains information about a group of lines. It contains an entry for each GROUP macro coded by the user (EP only). See LGT (NCP) for NCP line groups.

0(0) LGTREPLY Reply time-out in tenths of a second.	1(1) LGTTET Text time-out in tenths of a second.	2(2) Reserved	3(3) (LGTEOB) EOB character.
4(4) LGTLINE* Line information byte.	5(5) LGTEOT End of transmission for RPQ (optional).	6(6) Reserved	7(7) LGTQTCNT Number of character delays for SS line quiesce.

*Indicates a byte expansion follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) LGTLINE	.... x...	Line information byte. Data character detect security 0=Security (Start-Stop lines) 1=No security (BSC)
	.... .x..	Line type: 0=Switched 1=Nonswitched

LINE GROUP TABLE

Program: NCP

Size in bytes: Variable depending on line type.

Created by: NCP generation.

Pointer to LGT: CCBLGPT field in CCB.

Function: Contains line control parameters.

<table>
<tr><td>0(0)
LGTTYPE*
Terminal type identification.</td><td>1(1)
LGTSHTAP
Shoulder tap time-out state change mask.</td><td colspan="2">2(2)
LGTENDR1
Receive text status/ERP vector.</td></tr>
<tr><td colspan="2">4(4)
LGTENDR2
Receive text reply status/ERP vector.</td><td colspan="2">6(6)
LGTENDR3
Receive control reply status/ERP vector.</td></tr>
<tr><td>8(8)
LGTTIMEA**
Control time-out command (error time-out).</td><td>9(9)
LGTTIMEB**
Receive text (long) time-out command.</td><td>10(A)
LGTTIMEC**
Transmit time-out command (shoulder tap).</td><td>11(B)
LGTTIMED**
Response time-out command.</td></tr>
<tr><td>12(C)
LGTXIPCF
Transmit initial LCD/PCF value.</td><td>13(D)
LGTRIPCF
Receive initial LCD/PCF value.</td><td>14(E)
LGTINST
Initial level 2 state mask.</td><td>15(F)
LGTCMRTY
Control mode ERP retry limit.</td></tr>
<tr><td colspan="2" rowspan="2">16(10)
LGTCMD
Pointer to command decode table.</td><td colspan="2">18(12)
LGTLATO
Remote activity time field.</td></tr>
<tr><td>18(12)
LGTINCHR
Initial control character.</td><td>19(13)
LGTCOUNT
Write EOT command initial control character count.</td></tr>
</table>

*Indicates a byte expansion follows.

**Error time-outs are expressed as X'Cx'. Go to TVS DSECT and displace into TVS by a value of x for timer values. Shoulder tap time-outs are X'8x'.

20(14) LGTWACKL BSC received WACK limit. value.	21(15) LGTTTD BSC received TTD limit value.	22(16) LGTSYN BSC SYN character line code.	23(17) LGTRIST Receive initial state set after connect.
LGTSELG Start-stop selection address length.	LGTPOLLG Start-stop poll address length.	LGTPADCT Start-stop motor start pad count.	
LGTRX21 X.21 retry timer.			

BSC Line and EBCDIC Characters

24(18) LGTDLEEB DLE.	25(19) LGTETBE ETB EBCDIC.	26(1A) LGTDLEOT DLE.	27(1B) LGTEOTE EOT EBCDIC.
28(1C) LGTDLES DLE.	29(1D) LGTSTXE STX EBCDIC.	30(1E) LGTDLEIB DLE.	31(1F) LGTITBE ITB EBCDIC.
32(20) LGTDLE0 DLE.	33(21) LGTACK0 ACK0.	34(22) LGTDLE1 DLE.	35(23) LGTACK1 ACK1.
36(24) LGTDLER DLE.	37(25) LGTRVIE RVI EBCDIC.	38(26) LGTDLEEQ DLE.	39(27) LGTENQE ENQ EBCDIC.
40(28) LGTNAKE NAK EBCDIC.	41(29) LGTSOHE SOH EBCDIC.	42(2A) LGTDLEEX DLE.	43(2B) LGTETXE ETX EBCDIC.
44(2C) LGTDLEW DLE.	45(2D) LGTWACK WACK.	46(2E) LGTSOHA SOH ASCII.	47(2F) LGTSTXA STX ASCII.
48(30) LGTETBA ETB ASCII.	49(31) LGTETXA ETX ASCII.	50(32) LGTEOTA EOT ASCII.	51(33) LGTITBA ITB ASCII.
52(34) LGTENQA ENQ ASCII.	53(35) LGTNAKA NAK ASCII.	54(36) LGTDLEA DLE ASCII.	

Start/Stop Line and EBCDIC Control/Characters
(Label used dependent on terminal type.)

24(18) LGTUPPER Upshift.	25(19) LGTETB2 Circle B.	26(1A) LGTLOWER Down shift.	27(1B) LGTEOT2 Circle C. LGTTEOT EOT
28(1C) LGTEOT1 Circle C. LGTCIRC Circle C.	29(1D) LGTCIRD Circle D. LGTTNUL Null. LGTSTX1 Space or carriage return.	30(1E) LGTVTAB Vertical tab. LGTTVT Vertical tab.	31(1F) LGTHTAB Horizontal tab. LGTTHT Horizontal tab.
32(20) LGTLF Line feed. LGTTLF Line Feed	33(21) LGTCRLF Carriage return. LGTTCR Carriage return. LGTCR Carriage return or line feed.	34(22) LGTSPACE Space.	35(23) LGTBKSP Backspace. LGTSTX2 Carriage return or line feed.

36(24) LGTPAD Pad.	37(25) LGTIDLE Idle.	38(26) LGTSPEC (Reserved).	39(27) LGTPRC Prefix.
LGTTPAD Pad.	LGTSTX3 Idle.	LGTTSUB TWX substitution character.	LGTTENQ ENQ.
40(28) LGTCIRN NAK.	41(29) LGTRES Restore.	42(2A) LGTRSTP Reader stop.	43(2B) LGTETB1 Circle B.
		LGTTXOFF XOFF control character	LGTCIRB Circle B.
			LGTTXON XON control character.
44(2C) LGTCIRY Circle Y	45(2D) LGTBYP Bypass	46(2E) (Reserved)	47(2F) LGTPF Punch off.
	LGTWXCH1 Ending character.	LGTWXCH2 Ending character.	LGTWXCH3 Ending character.
48(30) LGTPON Punch on.	49(31) LGTDELET Delete.	50(32) LGTESLSH Slash. (EBCDIC)	51(33) LGTESPCE Space. (EBCDIC)

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		Terminal type identification.
LGTTYPE	X'00'	2741.
	X'02'	2740 basic.
	X'04'	2740 station control.
	X'06'	2740 transmit control.
	X'08'	2740 station control with checking.
	X'0A'	2740 transmit control with checking.
	X'0C'	2740 with checking.
	X'0E'	2740 Model 2 with checking.
	X'14'	2740 Model 2 without checking.
	X'1C'	1050.
	X'1D'	MTA.
	X'20'	TTYI-B (83B3).
	X'22'	TTYII.
	X'24'	TTY World Trade.
	X'26'	TTYI-A (115A).
	X'4A'	BSC EBCDIC point-to-point station.
	X'4C'	BSC EBCDIC control station.
	X'4E'	BSC EBCDIC tributary station.
	X'6A'	BSC ASCII point-to-point station.
	X'6C'	BSC ASCII control station.
	X'6E'	BSC ASCII tributary station.
	X'8C'	SDLC primary station.
	X'8E'	SDLC secondary station.

LINK CONTROL BLOCK (SDLC)

Program: NCP

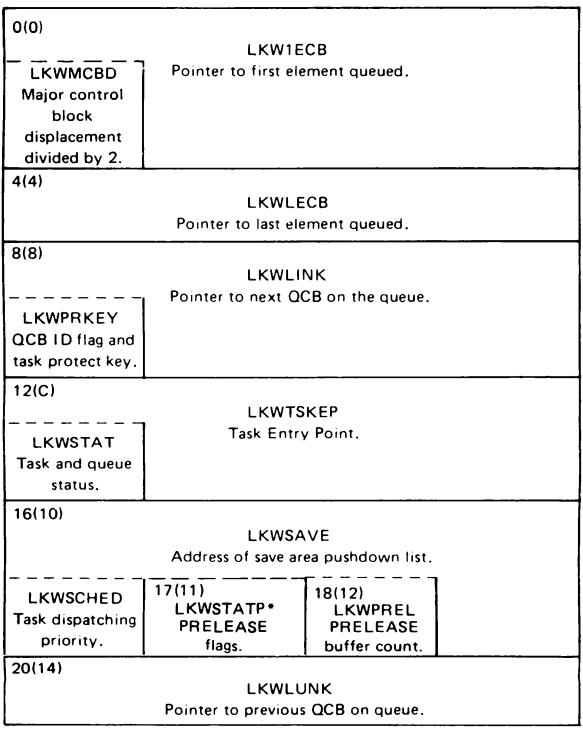
Size in bytes: 51(33)

Created by: NCP generation, one for each link.

Pointer to LKB: RVTRP field in RVT, LXBLKBP field in LXB.

Function: Contains fields for scheduling link operation and for maintaining link status information.

Link Queue Control Block (LKWQCB)
(See QCB for Input Queues for bit definition)



*Indicates a byte expansion follows.

24(18) LKBNWADR Network address of link.		26(1A) LKBSTAT* Status of link.	27(1B) LKBTYPE* Link type.
28(1C) LKBLPDA2* LPDA flags.	LKBACBP Address of adapter control block.		
32(20) LKBSNPM SNP mask of SSCPs.	33(21) LKBSWST* Switched status flags.	34(22) LKBERPL ERP limit.	35(23) Reserved.
36(24) LKBTCHN LKB chain pointer. Points to an alternate link's LKB.			
40(28) LKBPSEL Index into SDLCST for primary SDLC link.	41(29) LKBSSEL Index into SDLCST for secondary SDLC link.	42(2A) LKBDRST* Dynamic reconfiguration status.	43(2B) LKBCSEL Index into SDLCST for configurable SDLC link.
44(2C) LKBPUN Number of available entries in PU vector table.	LKBPUV Address of PU vector table entry.		
48(30) LKBLPDA* Link Problem Determination Aid (LPDA) flag byte	49(31) LKBALARM Network Problem Determination Application (NPDA) alarm parameter	50(32) LKBSST* Link subsystem type.	

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
17(11) LKWSTATP		PRELEASE flags.
	1.	Preleased triggered.
	.1	Type of PRELEASE=Slowdown.
	. .1	Type of PRELEASE=CWALL.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
26(1A) LKBSTAT		Status of link.
	1...	The link is active, an Activate Link command has been successfully processed.
	.1..	Activate Link in progress.
	..1.	Deactivate Link in progress.
	...1	Link quiesce pending. (Auto network shutdown)
	..1.	OLTT in progress.
	1	Wrap Test is in progress.
27(1B) LKBTYPE		Link type.
	1...	Leased.
	.1..	Switched.
	..1.	One or more clusters attached to this link.
	...1	One or more 3725s are attached to this link.
	1...	One or more terminals are attached to this link.
	..1.	One or more type 4 PU attached.
	1	Resource eligible for NPA data collection.
28(1C) LKBLPDA2		LPDA flags
	1...	LPDA termination.
33(21) LKBSWST		Switched status flags.
	1...	Connection exists.
	.1..	Link in answer mode.
	..1.	Dial in progress.
	...1	Switched enable pending.
42(2A) LKBDRST	1...	Free network address in progress.
48(30) LKBLPDA		Link Problem Determination Aid (LPDA) flag byte.
	1...	LPDA supported on link.
	.1..	LPDA test in progress.
	..1.	LPDA test ended with errors.
	...1	Issue Run XIO after LPDA test.
	1...	Status of link at start of test. 1=Busy. 0=Idle.
	xx	LPDA retry counter.
50(32) LKBSST	B'00' B'01'	No link substation LPDA

LINE VECTOR TABLE LNVT

Program: NCP, EP

Size in bytes: 2048(800). The line vector table contains two 4-byte entries for each of the 256 possible lines.

Located in: Controller storage beginning at the following default locations:

X'800' for scanner interface trace (SIT) NCP entries.
X'840' for SIT EP entries.
X'880' for all BSC, start stop, or SDLC entries.

Note: The LNVT location may be changed by the Set Line Vector Table High and Low operation codes.

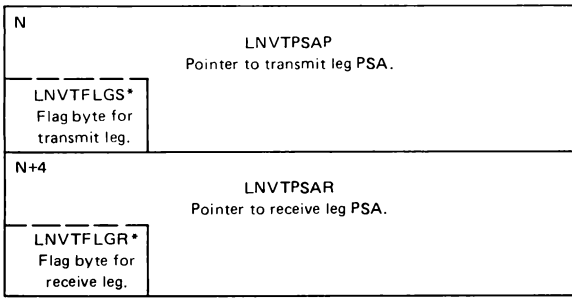
Created by: NCP or EP generation.

Referenced by: NCP or EP level 2 routines.

Function: LNVT entries from X'800' to X'880' are reserved for scanner interface trace (SIT) use and do not correspond to real lines. They represent pseudo lines that enable the CSP to transfer trace data to the NCP or EP.

LNVT entries from X'880' to X'1080' represent real lines and allow the NCP and CSP to find a line's parameter/status (PSA) control block when only the relative line number is known. The relative line number (0-255) is specified by the address operand of the LINE macro in the NCP stage 1 definition. The NCP converts this number into an even address or an even/odd pair of addresses depending upon the type of line being defined. Two LNVT entries exist for each possible line address (512 LNVT entries). For a duplex line, the first LNVT entry (always even) points to the transmit leg PSA and the second LNVT entry (always odd) points to the receive leg PSA. For a half-duplex line, the first entry points to the unique PSA used for both transmit and receive operations. The odd entry is unused and points to a dummy PSA.

Each pair of LNVT entries may be located by multiplying the relative line number by 8, converting to hex, and then adding X'880'.



*indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
LNVTFLGS and LNVTFLGR		Flag bytes
	1...	Start Line Initial required.
	.1..	Undefined line or SIT entry.
	..1.	In use by SIT or line trace.
	...1	Entry in use by CLDP (loader/ dump program)
	.... 1...	In use by panel line test.
	.... .x..	Reserved.
	.... ..1.	Command reject indicator (second command issued during first command).
	1	In use by EP.

LINE TRACE CONTROL BLOCK — LTCB

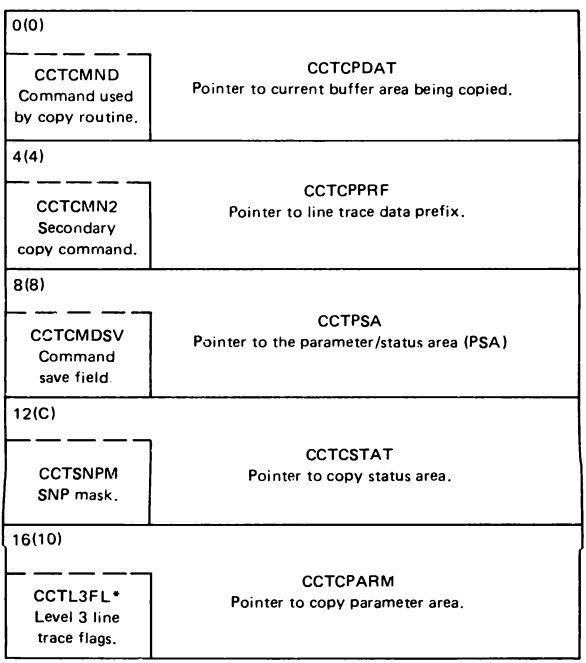
Program: NCP

Size in bytes: 108(6C)

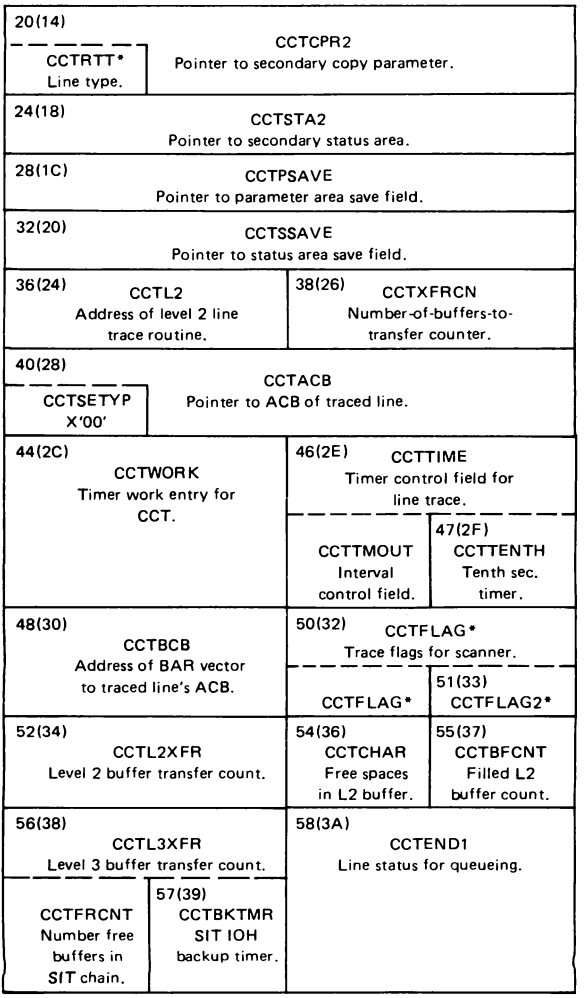
Created by: NCP generation

Pointer to LTCB: PSAACBP field in the PSA when line trace or scanner interface trace (SIT) is active. It points to the receive leg for duplex lines; the transmit leg LTCB immediately follows the receive leg LTCB.

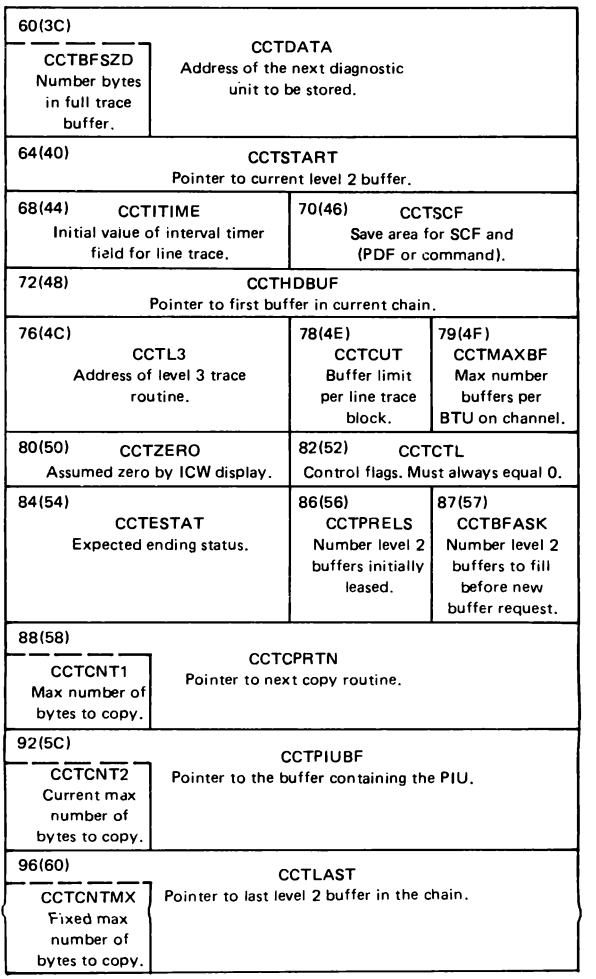
Function: Contains the pertinent parameters for the line trace and scanner interface trace functions. For duplex operation, two LTCBs are required—one for the transmit leg and one for the receive leg.



*Indicates a byte expansion follows.



*Indicates a byte expansion follows.



100(64) CCTCOPY Pointer to the current copy buffer in the chain.			
CCTR1 R1 IOH value for SIT.		102(66) CCTR2 R2 IOH value for SIT.	
CCTCMNDS Trace command for SIT.	101(65) CCTSLOT Trace LNVT slot number for SIT.	CCTSLPAC Select or PAC value for SIT.	103(67) CCTSLPA2 R2 low byte value for SIT.
104(68) CCTTYPEC X'00'	CCTLINK Pointer to next ACB on level 3 chain.		

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
16(10) CCTL3FL		Level 3 line trace flags.
	1.	All data copied.
	.x	1=Transmit copy processing. 0=Receive copy processing.
	. .x	1=Transfer OK if copy is active. 0=No transfer if copy is active.
	. . .1	Lost Data.
	. . . . 1. . .	Invalid command.
	. . . . .x . .	1=Graphics or I-data or polling characters. 0=No graphics, no I-data, and no polling characters.
	. . . . . .1 .	Store "Truncated data" message.
20(14) CCTRTT		Line type. See the byte expansion 63(3F) RU1RTT for the Record Trace Data (RECTRD) RU in Section 5.
50(32) CCTFLAG	Byte 0	Trace flags.
	x.	1= SS/BSC line. 0=SDLC line.
	.1	Copy pending flag.
	. . .x	1=High-speed line. 0=Low-speed line.
	. . . . x. . .	1=Scanner interface trace (SIT). 0=Line trace.
	. . . . . .x .	1=Transmit operation. 0=Receive operation.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
51(33) CCTFLAG2	Byte 1	Trace flags.
	1.	Lost data.
	.x	1=Error deactivation. 0=Host deactivation or SIT values: 1=SIT hardware error. 0=No SIT hardware error.
	. .x	1=Level 2 need not requeue CCT. 0=Level 2 must requeue CCT.
	. . . . .	Reserved
	. . . . 1. . .	Level 2 needs a buffer. or SIT value: Deactivation in progress.
	. . . . .1 . .	Data copy is active or SIT value: Deactivation request.
	. . . . . .1 .	Pending buffer request or SIT value: Deactivated.
	1	Pending deactivation or SIT value: Issue Stop Trace

LINE TRACE RETURN ADDRESS SAVE AREA LTR

Program: NCP

Size in bytes: 16(10)

Created by: NCP generation.

Pointer to LTR: Load Address of CXTLTR. The LTR is located at the end of the LTVT.

Function: The LTR contains one fullword entry for each level 2 line-trace subroutine that returns control to its caller via the address passed to it in an input register.

0(0)	LTR1 Return address
4(4)	LTR2 Return address
8(8)	LTR3 Return address
12(C)	LTR4 Return address

LINE TEST CONTROL BLOCK — LTS

Program: NCP

Size in bytes: 628(274)

Created by: NCP generation.

Located: CXANCB

Pointer to LTS: SYSLTSP field in HWE.

Function: Contains control information for panel line test operations.

0(0) LTSRDATP Pointer to receive buffer data area.			
4(4) LTSXDATP Pointer to transmit buffer data area.			
8(8) LTSCTL* Control byte 1.	9(9) LTSCTL2* Control byte 2.	10(A) LTSCTL3* Control byte 3.	11(B) LTSCTL4* Control byte 4.
12(C) LTSSVTSK Saved terminator task.			
16(10) LTSSAPTR Saved area pointer for levels 2 and 3.			
20(14) LTSADSW Value of the Address/Data switches.			
24(18) LTSXPSAP Transmit leg PSA pointer.			
28(1C) LTSRPSAP Receive leg PSA pointer.			
32(20) LTSXACBP Transmit leg ACB pointer			
36(24) LTSRACBP Receive leg ACB pointer.			
40(28) LTSXLNVT Address of LNVT entry for transmit.		42(2A) LTSRLNVT Address of LNVT entry for receive.	

*Indicates a byte expansion follows.

44(2C) LTSXL2 Pointer to the transmit level 2 routine.			
48(30) LTSRL2 Pointer to the receive level 2 routine.			
52(34) LTSDIALC Dial digit control.	53(35) LTSDIAL Dial digit data area. (16 bytes)		
	69(45) LTSDCNT Dial digit counter.	70(46) LTSRID Received hardware ID.	
72(48) LTSFUNC Current active function.		74(4A) LTSX21S1 Completion code status.	75(4B) LTSX21S2 Cause of DCE failure.
76(4C) LTSX21S3 First byte of negative call-progress-signal.	77(4D) LTSX21S4 Second byte of negative call-progress-signal.	78(4E) LTSXCNT Byte count in transmit buffer.	79(4F) LTSSMOFF Selected set mode byte number.
80(50) LTSPCNT Polling character counter.	81(51) LTSPOLL Polling characters (7 bytes).		
88(58) LTSACNT Addressing character counter.	89(59) LTSADDR Addressing characters (7 bytes).		
96(60) LTSHDWID Hardware ID to send to the device.			99(63) LTSIDCNT Hardware ID byte count.

100(64) LTSXBFR Transmit buffer prefix. (8 bytes)
108(6C) LTSXDATA Transmit buffer for panel line test. (256 bytes)
364(16C) LTSRBFR Receive buffer prefix. (8 bytes)
372(174)—627(273) LTSRDATA Receive buffer for panel line test. (256 bytes)

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
8(8) LTSCTL		Control byte 1.
	1.	Initialized line test.
	.1	A command is active.
	. .1	Switched line.
	. . .1	Multipoint line.
	. . . . 1. . .	Duplex adapter.
	. . . . .1 . .	SDLC line.
	. . . . . .1 .	X.21 switched line.
	1	Switched call-in line.
9(9) LTSCTL2		Control byte 2.
	1.	Single operation.
	.1	Continue operaton with errors.
	. .1	Error detected and displayed.
	. . .1	End the Active function.
	. . . . 1. . .	End panel line test.
	. . . . .1 . .	Send ID required on next I/O.
	. . . . . .1 .	Send ID required for this device.
	1	Receive ID expected from device.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
10(A) LTSCTL3		Control byte 3.
	1.	Flush command in progress.
	.1	Data has been received.
	. .1	Transmit leg interrupt occurred.
	. . .1	Receive leg interrupt occurred.
	. . . . 1. . .	Error occurred on transmit leg.
	. . . . .1 . .	Error occurred on receive leg.
	. . . . . .1 .	Line has been enabled.
	1	CCBL2 and CCBL3 linkage is set up.
11(B) LTSCTL4		Control byte 4.
	1.	Level 3 function is active.
	.1	XID exchange is required. (Bits 2 through 7 reserved.)

LINE TRACE VECTOR TABLE — LTVT

Program: NCP

Size in bytes: 16(10) plus 4 times the number of lines to be traced.

Created by: NCP generation.

Pointer to: SYSLTBP field in HWE

Function: Contains information and pointers relating to the line trace control blocks (LTCBs).

0(0) LTVTSTAT* Line trace status byte	1(1) LTVTCCTP Pointer to the line trace control block (LTCB). (Receive leg LTCB if duplex)
4(4)-n Up to seven additional line trace vector entries.	
End of line trace vector table (all zeros).	

Save Area (Always present)

CXTLTR Line trace level 2 save area for return address.
Three additional level 2 save areas.

*Indicates that a byte expansion follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) LTVTSTAT		Line trace status
	1...	Line trace active
	.x..	1=Duplex line trace. 0=Half-duplex line trace.
	..1.	TG trace only.
	...1	In use for scanner interface trace (SIT).

LOGICAL UNIT CONTROL BLOCK LUB

Program: NCP

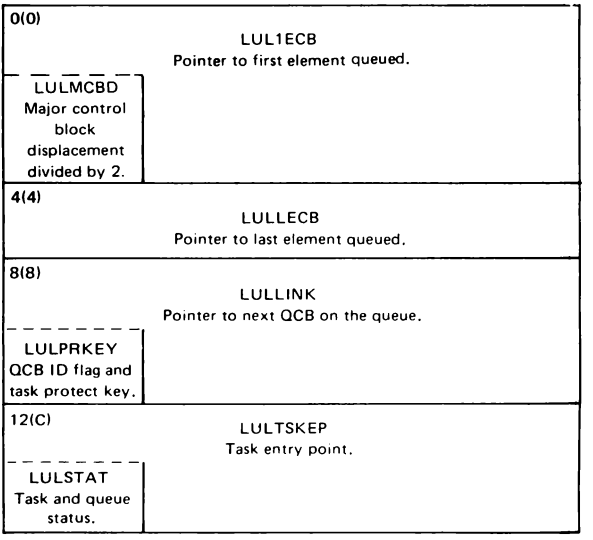
Size in bytes: 104(68)

Created by: NCP generation LU macro.

Pointer to LUB: RVTRP field in RVT (non-switched link), LUVLUB field in LUV (switched link).

Function: Provides QCBs, status, and control information for a logical unit.

SSCP-LU CPM Out Process Queue Control Block (LUBLPQ)
(See QCB for input queues for bit definitions)



16(10) LULSAVE Address of save area pushdown list.		
LULSCHED Task dispatching priority.	17(11) LULSTATP PRELEASE flags.	18(12) LULPREL PRELEASE buffer count.
20(14) LULLUNK Pointer to previous QCB on queue.		
LULBHSCH BHR scheduling bits.		
24(18) LULOFSET** Offset to next QCB from start of LUB	25(19) LUBSTRC* Session trace flags.	26(1A) LULNETAD Network address of LU.
		LUBNALU Network address of LU.

*Indicates a byte expansion follows.
**LULOFSET must have the same displacement in the LUB at NLBOFSET has in the NLB, and LULNETAD must have the same displacement as NLBNETAD.

LU-LU CPM Out Process Queue Control Block (LUBAPQ)

(See QCB for input queues for bit definitions)

28(1C)	
LUAMCBD Major control block displacement divided by 2.	LUA1ECB Pointer to first element queued.
32(20) LUALECB Pointer to last element queued.	
36(24) LUALINK Pointer to next QCB on the queue.	
LUAPRKEY QCB ID flag and task protect key.	

40(28)			
LUASTAT Task and queue status.	LUATSKEP Task entry point.		
44(2C)			
LUASAVE Address of save area pushdown list.			
LUASCHED Task dispatching priority.	45(2D) LUASTATP PRELEASE flags.	46(2E) LUAPREL Prelease buffer count.	
48(30)			
LUABHSCH BHR scheduling bits.	LUALUNK Pointer to previous QCB on queue.		
52(34) LUAOFSET** Dummy offset field.	53(35) LUBFEAT* Logical unit features.	54(36) LUASPART Network address of session partner.	
		LUBNAPL Network address of session partner.	
56(38)			
LUBCUB Address of Common Physical Unit Block (CUB)			
LUBCSTAT* LU status bits.			
60(3C) LUBTCNT Transmission counter.		62(3E) LUBCPSET* SSCP-LU Session control primary status.	63(3F) LUBCSSET* LU-SSCP Session control secondary status.
64(40) LUBAPSET* LU-LU Application primary status.	65(41) LUBASSET* Application secondary status.	66(42) LUBM NCP pacing parameter m.	67(43) LUBN NCP pacing parameter n.

*Indicates a byte expansion follows.

**LUAOFSET must have the same displacement in the LU-LU process queue control block of the LUB as NLXOFSET has in the NLX, and LUASPART must have the same displacement as NLXSPART.

68(44) LUBMG LU pace parameter m (System generated)	69(45) LUBNG LU pace parameter n (System generated)	70(46) LUBPC Pacing count.	71(47) LUBLALU Local address of logical unit.
72(48) LUBPS* Pacing flags	LUBPRADR Address of I-pacing response on LU-LU queue.		
76(4C) LUBCHAIN Chain pointer for nonsystem chaining. (Dynamic reconfiguration.)			
80(50) LUBRCBO Offset to the resource connection block.	81(51) LUBUNBTP* LUB unbind type.	82(52) LUBOUTB1 Last outgoing sequence number.	
84(54) LUBOUTB2 Next-to-last outgoing sequence number.		86(56) LUBINB1 Last incoming sequence number.	
88(58) LUBINB2 Next-to-last incoming sequence number.			

*Indicates a byte expansion follows.

Terminal Node (type 1 PU) Extension

The following 7 halfwords are for terminal node sequence number management.

	90(5A) LUBAOSLU SSCP-LU expedited outgoing identification.
92(5C) LUBSOSLU SSCP-LU normal outgoing identification.	94(5E) LUBAOLLU LU-LU expedited outgoing identification.
96(60) LUBSILLU LU-LU normal incoming sequence number.	98(62) LUBSOLLC LU-LU normal outgoing check.
100(64) LUBSOLLS LU-LU normal outgoing save.	102(66) LUBIDGN Identification number generation.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
25(19) LUBSTRC		Session trace flags.
	1.	Last outgoing PIU was expedited.
	.1	Next-to-last outgoing PIU was expedited.
	. .1	Last incoming PIU was expedited.
	. . .1	Next-to-last incoming PIU was expedited.
	. . . . 1. . .	Session trace for all resources.
	. . . . .1 . .	Session trace for a specific resource.
53(35) LUBFEAT		Logical unit features.
	1.	Resource eligible for NPA data collection.
56(38) LUBCSTAT		LU status bits
	1. . .	IPR withheld in incoming pacing flow.
	.1. .	VREVENT has been set.
	. .1	BFREVENT has been set.
62(3E) LUBCPSET		SCP primary status (SSCP-LU):
		Primary half session.
	1.	Session established.
	.1	Processing ACTLU.
	. .1	Processing DACTLU.
		Secondary half-session.
	. . .1	Session established.
	. . . . 1. . .	Processing ACTLU.
	. . . . .1 . .	Processing DACTLU.
63(3F) LUBCSSET		SCP secondary status (LU-SSCP):
	1. . .	Processing Clear.
	. . .1	Network address requested.
		Dynamic reconfiguration ownership is assigned in PUVSNP.
	. . . . 1. . .	This LUB is in the dynamic reconfiguration pool.
	. . . . .1 . .	Control block contains usable control vector information
	. . . . . .1 .	Dynamic reconfiguration added device.
	1	Device available to dynamic reconfiguration.

Offset Field/Name	Bit Pattern/ Hex Value	Contents
64(40) LUBAPSET		Application primary status (LU-LU):
		Primary half-session.
	1...	Session established.
	.1..	Processing Bind to SLU.
	..1.	Unbind to SLU pending.
	...1	Unbind to SLU required.
	.... 1...	Session end pending.
		Secondary half-session.
	.... .1..	Unbind to PLU pending.
	.... ..1.	Unbind to PLU required.
65(41) LUBASSET		Application secondary status:
	x...	1=Processing Clear. 0=Not processing.
	.1..	Inbound segmentation in progress.
	..x.	1=Pri LU in immediate request mode. 0=Delayed request mode.
	...1	Null BB PIU pending.
	.... x...	1=INB (In bracket state). 0=BETB (Between brackets).
	.... .1..	BB PIU pending.
	.... ..1.	PBID pending.
	1	Bracket state management mode.
72(48) LUBPS		Pacing flags.
	1...	Pace required by host.
	.1..	Send pace to the host early.
	..1.	Pace sent to the host early.
	.... 1...	Awaiting pace from LU.
	.... .1..	Received pace response from LU.
	1	I-pacing response on LU-LU queue.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
81(51) LUBUNBTP		LUB unbind type.
	X'01'	Normal end of session.
	X'02'	Bind forthcoming.
	X'03'	Talk.
	X'04'	Restart mismatch.
	X'05'	LU not authorized.
	X'06'	Invalid session parameters.
	X'07'*	Virtual route inoperative.
	X'08'*	Route extension inoperative.
	X'09'*	Hierarchical reset.
	X'0A'*	SSCP gone.
	X'0B'*	Virtual route deactived.
	X'0C'	Fail.

*These unbind types can be set by NCP.

LOGICAL UNIT VECTOR TABLE LUV

Program: NCP

Size in bytes: One 8-byte entry for each logical unit that can be assigned to a physical unit.

Created by: NCP generation.

Pointer to LUV: CUBLUV field in CUB.

Function: Used to locate the logical unit control blocks (LUBs) that are assigned to a physical unit.

LUV Entry

0(0) LUVLUB Pointer to LUB or NLB.	
LUVLA Local address of logical unit.	
4(4) LUVFLGS* Status flags.	5(5) Reserved

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) LUVFLGS		LUV status flags.
	1...	Last entry in LUV.
	.1..	Entry in use.
	..x.	Dynamic reconfiguration indicator. 1=DR processing the freeing of a LUB. 0=DR processing—not the freeing of a LUB.
	...1	Temporarily marked for add. This entry has been validated for a dynamic reconfiguration add process.

LINK XIO CONTROL BLOCK — LXB

Program: NCP

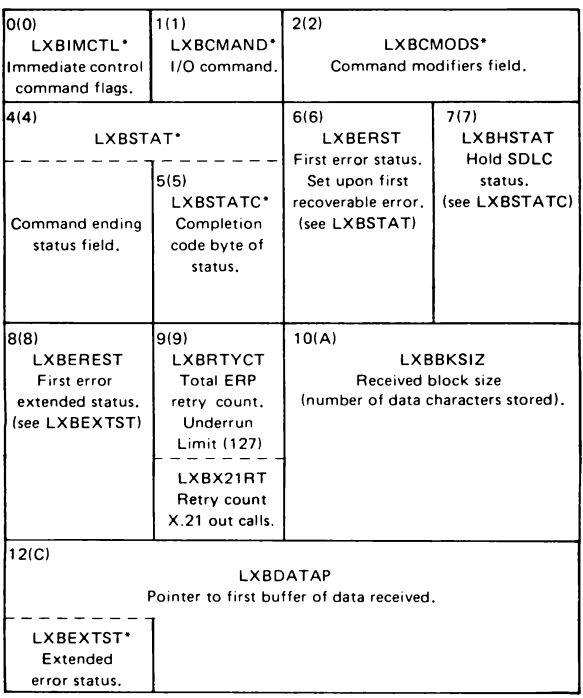
Size in bytes: 36(24)

Located in: ACB

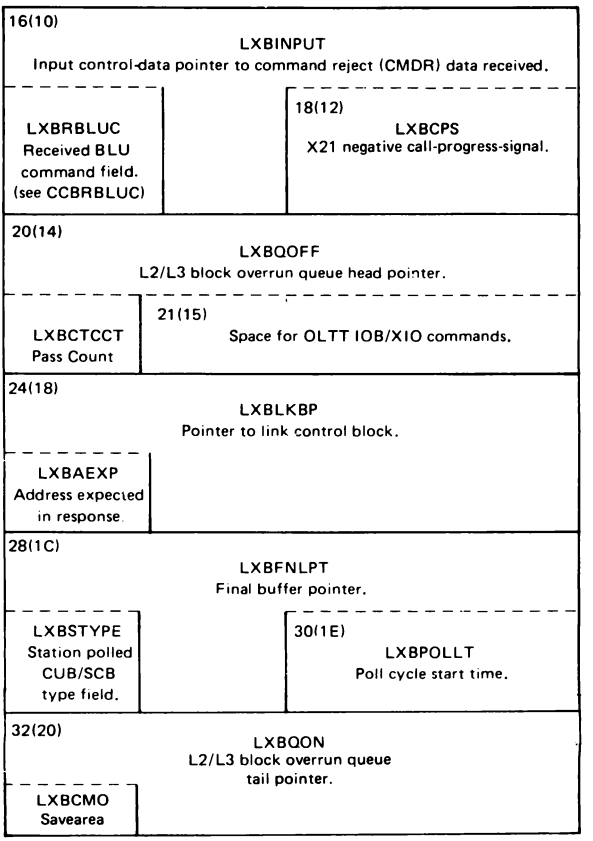
Created by: NCP Generation (SDLC links)

Pointer to LXB: LKBACBP field in LKB.

Function: Contains the status of SDLC link operations.



*Indicates a byte expansion follows.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		Immediate control command flags:
LXBIMCTL	X'80'	Reset Immediate issued.
		Set Mode commands (for idle or busy lines):
	X'81'	Reset Immediate soft reset issued.
	X'04'	Read line type.
	X'06'	Set text error retry limit.
	X'10'	Set receive buffer cutoff factor.
	X'12'	Start line trace.
	X'14'	Stop line trace.
	X'18'	Set operation link.
	X'1A'	Reset operational link.
	X'1C'	Set intensive mode (IM) active in SCBSTMOD.
	X'1E'	Set IM stopped for slowdown in SCBSTMOD.
	X'20'	Set IM stopped for SCV(IM) in SCBSTMOD.
	X'22'	Reset three IM bits in SCBSTMOD.
		Set Mode commands (idle lines only):
	X'05'	Set line adapter interface parameters.
	X'07'	Set line control procedure.
1(1)		LXB command:
LXBCMAND	X'00'	No I/O occurred.
	X'30'	Run SDLC link.
	X'40'	Run Link Problem Determination Aid (LPDA) test.
	X'83'	Disable.
	X'87'	Wrap.
	X'8D'	Enable.
	X'8F'	Dial.
2(2)	Byte 0	Command modifiers:
LXBCMODS	x. . .	1=Suppress ending a new command due to outstanding status. 0=Immediate end to new command when status is outstanding.
	.x . .	1=No retry. 0=Retry.
	. . .x	1=Immediate retry if errors while normal polling. 0=If errors, retry at next normal poll cycle.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
2(2) LXBCMODS (cont)	...x	1=Do not release transmitted buffers. 0=Release transmitted buffers after ACK.
	Byte 1	
	x...	1=Perform command reset step first. 0=Normal command execution.
	.x..	1=Perform function to handle XID '07' in response to SNRM 0=Normal command execution.
4(4) LXBSTAT	1...	Extended error status. (see LXBEXTST)
	.1..	Format exception – invalid SDLC format. • Frame contained data (NSA, SNRM). • Not a complete frame. • The following is a list of LXBSTATC values and the reason for the format exception: 0E Rec REJ, line is not duplex 1C Rec RR or in NS Phase 1E Rec XID in RR or RNR Phase A2 Rec invalid SDLC command A8 Rec SDLC DISC AC Rec RQI B2 Rec SDLC SNRM B6 Rec SDLC ROL BC Rec NSA in RR or RNR phase BD Sent SNRM did not rec NSA
	...1	FCS error (data check). Run command error/exception phase field:
	.... 000.	No command active.
	.... 001.	SDLC I-format sent or SDLC RR sent.
	.... 010.	SDLC RNR sent.
	.... 011.	SDLC NS command sent
	.... 100.	Transmit.
	.... 101.	Error while sending text I-format.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) LXBSTAT (cont)	.... 110. .... 111.	Error while sending normal polling or response S-format. Error while sending NS control sequence.
5(5) LXBSTATC		Completion code status byte:
	000.	Normal final status: Control information received in S-format.
	...0 000.	Time-out – received RR, RNR or REJ.
	...0 101.	Test frame received.
	...0 110.	Partial acknowledgment – sequence number change. (OR) Negative acknowledgment – sequence number does not change.
	...0 111.	SDLC REJ received.
	...1 110.	SDLC RR received – positive acknowledgment (NS=NR).
	...1 111.	SDLC RNR received.
	001.	Normal final status: Data received in I-format.
	...0 000.	Time-out – received address and control fields.
	...0 010.	Buffer cutoff – exceeded buffer limit.
	...0 101.	Test frame received.
	...0 110.	Partial acknowledgment – sequence number change. (OR) Negative acknowledgment – sequence number does not change.
	...1 010.	End of Block – I-format received.
	011.	Normal final status: Data received in NS-format.
	...0 000.	Time-out – flag received.
	...0 001.	SDLC CMDR received (no retry) – RECMS record has reason for CMDR.
	...0 010.	Buffer cutoff – exceeded buffer limit.
	...0 101.	Test frame received.
	...1 010.	SDLC NSI received.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
5(5) LXBSTATC (cont)	100.	Special 0 final status: Special status or control information received in NS-format.
	...0 000.	Time-out – nothing received.
	...0 010.	Buffer pool depleted – no more buffers available.
	...0 110.	Reset – end run command.
	...0 111.	Invalid address received from secondary.
	...1 011.	Poll stop.
	...1 100.	SDLC frame sent.
	...1 110.	Disabled.
	...1 111.	Enabled.
	101.	Special 1 SDLC final status: Control information received in NS-format.
	...0 000.	Time-out – received flag.
	...0 001.	Received invalid SDLC command (no retry).
	...0 010.	Received invalid (incongruous) N(R) in I or S-format.
	...0 011.	Link activity time-out (secondary only).
	...0 100.	Received SDLC DISC.
	...0 110.	Received SDLC RIM or SIM (no retry).
	...1 000.	Record statistics – total retry count overflow or transmission count overflow.
	...1 001.	Received SDLC SNRM.
	...1 010.	Received SDLC RD (old RQD).
	...1 011.	Received SDLC DM (old ROL) (no entry).
	...1 100.	Received SDLC SIM.
	...1 110.	Received SDLC UA (old NSA)
	...1 111.	Received SDLC XID.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
5(5) LXBSTATC (cont)	111. ....0 001. ...0 011. ...0 100. ...0 101. ...0 1100 ...0 111. ...1 000. ...1 001. ...1 010. ...1 011. ...1 100.	Hardware final status. Modem check – CTS dropped during command. Transmit underrun limit exhausted. Adapter Check – • Timer has detected no level 2 interrupt when at least one was expected. • Modem self-test failed to get a level 2 interrupt after placing the PCF in turnaround. • Enable or dial failed to get a level 2 interrupt after setting the PCF to set mode. Adapter feedback check – • Timer detects an LCD of X'F', which results from a hardware-detected error within the adapter. • Improper system generation for the adpater in use. Equipment check. Modem check – DSR dropped during command. Modem error – Set when the SCF modem error bit is on. • Occurs when DSR drops during a transmit or receive operation. • Can be set by the timer. • Set if CTS drops while transmitting. Transmit clock or CTS failure – • During enable or write control operation, a Level 2 interrupt failed to follow line turnaround. • During enable on a duplex line, CTS failed to come up. • Time-out occurs with PCF of transmit initial (8). DSR "turn on" check – DSR fails to come up during an enable or dial operation. No cable installed. DSR "turn off" check – DSR fails to drop during a disable operation.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	...1 110.	Auto-call check – • Initial dial PCF 'F' sees ACR, DLO, COS, or PND up. • Dial PCF '4' sees ACR or COS up.
	1111 1111	Program failure – • Line I/O code completed in an impossible status, (e.g., ENQ on SDLC line). • A negative data length was computed.
	x	Poll/final bit.
12(C) LXBEXTST	1...	Overrun if LXBSTAT bit 4=0. • Lost character, PDF overlayed. • Flag received off boundary. Underrun if LXBSTAT bit 4=1. Character in PDF transmitted more than once. (Limit 127 retries LXBRTYCT)
	.1..	X.21 timeout proceed to select
	..1.	X.21 timeout ready for data.
	...1	X.21 DCE clear occurred.
	.... 1...	Block overrun occurred. Level 3 block processing in progress when another block available from Level 2.
	.... .1..	X.21 timeout in clear sequence.
	.... ..1.	Abort received. 8 consecutive 1 bits received. or X.21 negative CPS received.
	1	Monitor count overflow. 64 temporary I-format receive errors have occurred. • I-format receive data check. • I-format receive format checks. • I-format receive aborts.

LEVEL 1 CONTROL BLOCK — L1B

Program: NCP, EP, PEP

Size in bytes: 128(80)

Created by: Shared-code module CXASCB calls generating macro CXTL1B.

Pointer to L1B: SYSL1BP field at X'07C0' in XDA.

Function: Contains all the data collected by level 1 in problem determination and ERP activities resulting from a level 1 interrupt. It is used by the level 1 module, CXBL1PM.

Index

Name	Offset	Name	Offset	Name	Offset
L1BABND	22(16)	L1BERFLG	44(2C)	L1BMCTP	112(70)
L1BABND2	82(52)	L1BERID	27(1B)	L1BNLIS	24(18)
L1BASTP	116(74)	L1BERTYP	26(1A)	L1BPIOTA	102(66)
L1BBDPTR	104(68)	L1BFLAGS	74(4A)	L1BPIO76	72(48)
L1BCAA	77(4D)	L1BFLGCA	80(50)	L1BRDV	46(2E)
L1BCAAW	78(4E)	L1BFLGTS	75(4B)	L1BRDVH	45(2D)
L1BCAB	68(44)	L1BFRDV	46(2E)	L1BRDVPR	70(46)
L1BCAR6D	96(60)	L1BILIAR	12(C)	L1BRST7E	34(22)
L1BCAR6E	98(62)	L1BLNVT	48(30)	L1BSBFLG	120(78)
L1BCAR6F	100(64)	L1BILVL	7(7)	L1BSPR	108(6C)
L1BCAR60	84(54)	L1BINST	20(14)	L1BSTA	124(7C)
L1BCAR61	86(56)	L1BINSTA	16(10)	L1BSV7E	36(24)
L1BCAR62	88(58)	L1BIOH	28(1C)	L1BSX76	122(7A)
L1BCAR63	90(5A)	L1BIOHTA	30(1E)	L1BXR7D	40(28)
L1BCAR66	92(5C)	L1BIOHTD	32(20)	L1BXR7E	4(4)
L1BCAR67	94(5E)	L1BLAB3	66(42)	L1BXR74	0(0)
L1BCLAB1	62(3E)	L1BLAB4	52(34)	L1BXR75	10(A)
L1BCLAB2	64(40)	L1BLAB5	54(36)	L1BXR76	8(8)
L1BCSCR	50(32)	L1BLAB6	56(38)	L1BXR79	6(6)
L1BCSESC	42(2A)	L1BLAB7	58(3A)	L1B1CTA0	38(26)
L1BCSPA	79(4F)	L1BLAB8	60(3C)	L1B1CTD1	39(27)

0(0) L1BXR74 (L1BLAR) External register 74—lagging address register.		
4(4) L1BXR7E CCU level 1 interrupt requests.	6(6) L1BXR79 Utility register	7(7) L1BILVL Interrupted level.
8(8) L1BXR76 IOC level 1 interrupt requests.	10(A) L1BXR75 AIO CCW register.	
12(C) L1BILIAR Interrupted level IAR.		
16(10) L1BINSTA Instruction address for program checks.		
20(14) L1BINST First 2 bytes of instruction.	22(16) L1BABND Abend code for building a CRP entry.	
24(18) L1BNLIS Number of level 1 interrupts.	26(1A) L1BERTYP Box error record (BER) type.	27(1B) L1BERID BER ID.
28(1C) L1BIOH IOH/IOHI image for PIO errors.	30(1E) L1BIOHTA IOH/IOHI TA data.	
32(20) L1BIOHTD IOH/IOHI TD data.	34(22) L1BRST7E Mask to reset 7E bit.	
36(24) L1BSV7E Savearea for X'7E'.	38(26) L1B1CTA0 TA for command on command error.	39(27) L1B1CTD1 TD for command on command error.
40(28) L1BXR7D CCU hardware check register.	42(2A) L1BCSESC CSP error status register.	
44(2C) L1BERFLG* BER flags.	45(2D) L1BRDVH Redrive hash.	46(2E) L1BRDV (L1BFRDV) Frame 2 redrive error reg.

*Indicates a byte expansion follows.

<table>
<tr><td colspan="2">48(30)
L1BLNVT
Pointer to LNVT for line with command reject error (see L1BCSCR)</td><td colspan="2">50(32)
L1BCSCR
Error status for command reject due to second command issued during first command.
First command. | Second command.</td></tr>
<tr><td colspan="2">52(34)
L1BLAB4
Redrive error reg for LAB4.</td><td colspan="2">54(36)
L1BLAB5
Redrive error reg for LAB5.</td></tr>
<tr><td colspan="2">56(38)
L1BLAB6
Redrive error reg for LAB6.</td><td colspan="2">58(3A)
L1BLAB7
Redrive error reg for LAB7.</td></tr>
<tr><td colspan="2">60(3C)
L1BLAB8
Redrive error reg for LAB8.</td><td colspan="2">62(3E)
L1BCLAB1
Redrive error reg for CLAB1.</td></tr>
<tr><td colspan="2">64(40)
L1BCLAB2
Redrive error reg for CLAB2.</td><td colspan="2">66(42)
L1BLAB3
Redrive error reg for LAB3.</td></tr>
<tr><td colspan="2">68(44)
L1BCAB
Redrive error reg for CAB.</td><td colspan="2">70(46)
L1BRDVPR
Redrive response to Poll command.</td></tr>
<tr><td colspan="2">72(48)
L1BPIO76
X'76' when level 1 PIO operation fails.</td><td>74(4A)
L1BFLAGS*
Level 1 flags.</td><td>75(4B)
L1BFLGTS*
Transmission subsystem processing flags.</td></tr>
<tr><td>76(4C)
L1BLCAT
Count of lost CA trace records.</td><td>77(4D)
L1BCAA
CA address for reselect.</td><td>78(4E)
L1BCAAW
Address of CA with level 1.</td><td>79(4F)
L1BCSPA
Physical CSP address.</td></tr>
<tr><td colspan="2">80(50)
L1BFLGCA*
CA flags.</td><td colspan="2">82(52)
L1BABND2
Abend code for system abend.</td></tr>
</table>

*Indicates that a byte expansion follows.

84(54) L1BCAR60 X'0'—Level 3 interrupt initial-selection control register.	86(56) L1BCAR61 X'1'—Level 3 interrupt initial-selection address & command reg.
88(58) L1BCAR62 X'2'—Level 3 interrupt data/status control register.	90(5A) L1BCAR63 X'3'—Level 3 interrupt ESC address and status byte register.
92(5C) L1BCAR66 X'6'—CA level 3 interrupt NSC status/control register.	94(5E) L1BCAR67 X'7'—CA enable mask and NSC bits.
96(60) L1BCAR6D X'D'—CA level 1 interrupt check register.	98(62) L1BCAR6E X'E'—Number and address of CA causing level 1 interrupt.
100(64) L1BCAR6F X'F'—Selected CA level 3 interrupt.	102(66) L1BPIOTA TA for failing IOH in level 1.

*Indicates that a byte expansion follows.

<table>
<tr><td colspan="3">104(68)
L1BBDPTR
Pointer to the board slot in the machine configuration table (MCT).</td></tr>
<tr><td colspan="3">108(6C)
L1BSPR
Fixed or shared pointer register.</td></tr>
<tr><td colspan="3">112(70)
L1BMCTP
Pointer to the machine configuration table (MCT).</td></tr>
<tr><td colspan="3">116(74)
L1BASTP
Pointer to the adapter status table.</td></tr>
<tr><td>120(78)
L1BSBFLG
Saved BER flag. byte.</td><td>121(79)
Reserved.</td><td>122(7A)
L1BSX76
Saved 76 image from level 1 IOH failure.</td></tr>
<tr><td colspan="2">124(7C)
L1BSTA
Saved TA image from level 1 failure.</td><td>126(7E)
Reserved</td></tr>
</table>

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
44(2C) L1BERFLG		Box error record flags.
	x.	1=Control program is NCP or PEP. 0=Control program is EP.
	.1	Adapter down.
	. .1	Control program put adapter down.
	. . .1	First CSP on board is down or error on invalid ESC.
	. . . . 1. . .	Second CSP on board is down.
	. . . . .1 . .	Error on Get Error Status.
	. . . . . .1 .	CA is being disabled.
	1	IOH or IOHI on level 1 failed twice.
74(4A) L1BFLAGS		Level 1 flags.
	1.	Abend at end of level 1 processing.
	.1	Build a CRP entry at the end of level 1 processing.
	. .1	Unresolved interrupted level.
	. . .1	Reselect the CA indicated in L1BCAA.
		(Bits 4 through 7 reserved).
75(4B) L1BFLGTS		Transmission subsystem (TSS) flags.
	.1	Error status from disconnected TSS.
	. .1	Analyze CSP error status.
	. . .1	CSP error status=0.
		(Bits 0 and 4 through 7 reserved).
80(50) L1BFLGCA	Byte 0	CA flags.
	1.	Do not retry this CA operation.
	.1	Disable this CA.
	. .1	This CA is in level 3 service.
	. . .1	EP had control.
	. . . . 1. . .	EP initial selection.
	. . . . .1 . .	EP data/status.
	. . . . . .1 .	NCP initial selection.
	1	NCP data/status.
	Byte 1	
	1.	Level 1 CA checks are reset.
	. .1	Suppress-out monitor required.

LEVEL 4 ROUTER CONTROL BLOCK L4B

Program: NCP, EP

Size in bytes: 8(8)

Located in: CXASCB, the NCP or EP shared code module.

Updated by: PCIL4 macro.

Pointer to L4B: SYSL4BP field at X'079C' in XDA.

Referenced by: Level 4 router (CXAL4RTR) and the PCIL4 user macro.

Function: Contains information used by the level 4 router (CXAL4RTR) and the PCIL4 user macro.

The priority (specified by level 4 router processing and PCI interrupt request processing) is in the same order as the L4B (0 through 7).

0(0) L4BL45WT Level 4 or level 5 wait mask.	1(1) L4BLEASE Lease request.	2(2) L4BSLODN Slowdown request.	3(3) L4BDISPT Dispatcher request.
4(4) L4BMDNOF MOSS down or offline request.	5(5) L4BCRP CRP entry service.	6(6) L4BMOSSX MOSS transfer request.	7(7) Reserved

MOSS BUFFER FORMAT — MBF

Program: NCP, EP

Size in bytes: 80(50) for mailbox-image; 76(4C) for wrap request; variable for box error record (BER).

Function: The MOSS buffer is used to pass information between the NCP or EP and the maintenance and operator subsystem (MOSS). The buffer contains two parts; (1) a FID1 prefix, ECB, and work area and (2) one of three request areas. The request area may contain (1) a mailbox-image, or (2) wrap request control and response results, or (3) a BER. The MBF does not contain a TH or RH. See the MBX foldout for a summary of the in/out-mailbox request fields used by each valid mailbox command.

Common to the three requests.

0(0)—41(29)
FID1 prefix, ECB, and work area. (See PIU FID1 for format)

Mailbox Image Request

		42(2A) Alignment bytes.	
44(2C) MBFCMAND** Mailbox command.	45(2D) MBFCNTRL** Mailbox control.	46(2E) MBFDATLN Data length or 0 if data is in NCP/EP buffer format.	
48(30) MBFDATAD Data address.			
Reserved			
52(34) MBFDATA2 Second data address field.			
MBFGPA General purpose field A.	53(35) MBFGPB General purpose field B.	54(36) MBFGPC General purpose field C.	55(37) MBFGPD General purpose field D.
MBFTHB0 PIU TH byte 0. (Outgoing only)	MBFRHB0 PIU RH byte 0. (Outgoing only)	MBFRUB0 PIU RU byte 0. (Outgoing only)	MBFRUB1 PIU RU byte 1. (Outgoing only)
MBFBFCT Number of buffers requested (Request Buffer)			

**See the MBX for corresponding MBF byte expansions.

56(38) MBFGPE General purpose field E.	57(39) MBFGPF General purpose field F.	58(3A) MBFGPG General purpose field G.	59(3B) MBFGPH General purpose field H.
MBFRUB2 PIU RU byte 2. (Outgoing only)		MBFCSPAD Scanner address. (Connect Scanner command)	
MBFSENSE Sense code. (Incoming only)			
60(3C) MBFSTAT** Status bytes.		62(3E) Reserved	
MBFSTAT1 Request accepted or rejected.	61(3D) MBFSTAT2 Reject reason.		
64(40) MBFSTATA Status address (address of first buffer leased for MOSS).			
Reserved			
68(44)—75(4B) Reserved			
76(4C) MBFBCTRL* Buffer control.	77(4D) Reserved		

Wrap Request

Control Information

		42(2A) MBFLIFAD Line interface address.	
44(2C) MBFCMND* Wrap command.	45(2D) MBFMODIF* Wrap modifier.	46(2E) MBFNUMWR Number of wraps.	47(2F) Reserved
48(30) MBFTPSND Pointer to pattern to send.			
52(34) MBFTPEXP Pointer to pattern expected to be received.			

*Indicates a byte expansion follows.
**See the MBX for corresponding MBF byte expansions.

Response Results

56(38) MBFTPBAD Pointer to first bad pattern.			
60(3C) MBFRSLT1* Wrap status byte 1. (Results of wrap test)	61(3D) MBFRSLT2* Wrap status byte 2.	62(3E) MBFNUMTR Number of transmissions attempted.	63(3F) MBFNUMRC Number of test patterns received. (≥1 character)
64(40) MBFNUMBD Number of test patterns received that did not match expected pattern.	65(41)–70(46) MBFXSTAT* Wrap extended status bytes.		
	MBFXSCF Secondary control field (Xmit)	66(42) MBFXLCS Line communication status (Xmit)	67(43) MBFXSES Secondary ending status (Xmit)
MBFXSTAT (Cont.) Wrap extended status bytes			71(47)–75(4B)
68(44) MBFRSCF SCF (Receive)	69(45) MBFRLCS LCS (Receive)	70(46) MBFRSES SES (Receive)	
Reserved			

Box Error Record (BER) Request

		42(2A) Alignment bytes
44(2C) MBFBER BER start	45(2D)–n BERs are variable in length and contain various types of information. See the BER.	

**Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
44(2C) MBFCMAND		Mailbox command—see MBXCMAND in the MBX for bit definitions and the MBX foldout for each command's mailbox fields.
MBFCMND		Wrap command
	X'10'	Stop Wrap request by NCP or EP.
	X'20'	Stop Wrap request by MOSS.
	X'40'	Start Wrap request
	X'80'	Initialize Wrap request.
45(2D) MBFCNTRL		Mailbox control—See MBXCNTRL in the MBX for bit definitions.
MBFMODIF		Wrap modifier.
	.... x...	1=Wrap leads. 0=Wrap data.
	.... .x..	1=External. 0=LIC level.
	.... ..x.	1=Modem. 0=Cable.
	x	1=Fixed number of wraps. 0=Continuous wrap.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) MBFSTAT		Status bytes—see MBXSTAT in the MBX for bit definitions and the MBX foldout for the valid status for each mailbox command.
MBFRSLT1		Wrap status (Results of wrap test).
	x.	1=Not processed. 0=Processed.
	X'00'	Test completed with no errors.
	X'40'	Test stopped by MOSS.
	X'41'	Test stopped due to buffers-not-available.
	X'42'	Test stopped by level 4 mailbox manager.
	X'80'	Line not NCP/EP generated.
	X'81'	Line active.
	X'82'	Invalid sequence.
	X'83'	Test not running.
	X'84'	Line being switched; reissue Wrap.
	X'85'	Unable to initialize line to wrap mode.
	X'86'	OEM line.
	X'87'	Invalid command or parameter.
	X'88'	Buffers not available.
	X'89'	Non-op DUALCOM line (EP only).
	X'8A'	Panel line test in progress.
61(3D) MBFRSLT2		Wrap status byte 2.
	X'02'	Backup timer time-out.
	X'04'	CSP ending status error.
	X'08'	Bad pattern found.
65(41) MBFXSTAT		Wrap extended status bytes.
	. . . . x. . .	1=NCP. 0=EP.
	. . . . .x . .	1=Normal mode. 0=Character mode.
76(4C) MBFBCTRL		Mailbox image—Buffer control
	1.	EP request.
	.1	NCP request.
	..1	Mailbox manager set Wrap Test Results.

Program: NCP, EP

Size in bytes: 32(20)

Created by: NCP/EP generation

Pointer to MBX: In mailbox—SYSMBIN field at X'0794' in XDA; Out mailbox—SYSMBOUT field at X'0798' in XDA.

Function: The in-mailbox contains the *incoming request* from the maintenance and operator subsystem (MOSS) and the status returned by the mailbox manager. The out-mailbox contains the *outgoing request* to MOSS and the status returned from MOSS.

See the MBX foldout for a summary of the in/out-mailbox request fields used by each valid mailbox command.

In Mailbox (MOSS to NCP/EP)

Mailbox Request (MOSS Writes—NCP/EP Reads)

0(0)	1(1)	2(2)	
MBXCMAND* Mailbox command.	MBXCNTRL* Mailbox control.	MBXDATLN Data length or 0 if data is in NCP/EP buffer format.	
4(4) MBXDATAD Data address (valid when MBXCNTRL=B'1xxx xxxx').			
Reserved			
8(8) MBXDATA2 Second data address field. (Pointer to buffer used to send response.)			
MBXGPA General purpose field A.	9(9) MBXGPB General purpose field B.	10(A) MBXGPC General purpose field C.	11(B) MBXGPD General purpose field D.
MBXBFCT Number of buffers requested.			
12(C) MBXGPE General purpose field E.	13(D) MBXGPF General purpose field F.	14(E) MBXGPG General purpose field G.	15(F) MBXGPH General purpose field H.
MBXSENSE Sense code. (Used to send negative response)		MBXCSPAD Scanner address.	

*)*Indicates a byte expansion follows.*

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		Mailbox commands.
MBXCMAND	x.	Command indicator.
		1=Mailbox In command.
		0=Mailbox Out command.
	.xx	Command type.
		00=Normal command.
		01=Initialization command.
		10=CLDP command.
		11=Invalid.
		Mailbox Out Normal Commands.
	X'06'	Transfer PIU.
	X'07'	Box Error Record.
	X'08'	Buffers Now Available.
	X'09'	Wrap Test Results.
	X'0C'	Time/Date Valid.
		Mailbox Out Initialization Commands.
	X'23'	Control Program Parameters.
	X'24'	Request Hardware CDS.
	X'25'	Control Program Initialization Complete.
		Mailbox Out CLDP Commands.
	X'41'	Control Program Loaded.
	X'42'	Roll-In Saved Storage for Dump.
		Mailbox In Normal Command.
	X'86'	Transfer PIU.
	X'89'	Wrap Test Request.
	X'8D'	Connect Scanner.
	X'8E'	Request Buffer.
	X'8F'	Free Buffer.
	X'90'	MOSS Offline.
	X'91'	MOSS Online.
		Mailbox In Initialization Commands.
	X'A3'	Control Program Parameters Saved.
	X'A4'	CDS Information Available.
		Mailbox In CLDP Commands.
	X'C1'	Scanner IPL Complete.
	X'C2'	Roll-In Complete.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
1(1) MBXCNTRL		Mailbox control.
	1.	Data address field valid.
	.x	Data format 1=Data in NCP or EP buffers. 0=NCP or EP buffers not used.
	. . . . x. . .	PIU routing (In only) 1=Broadcast PIU to all owning SSCPs. 0=PIU has its DAF.
	. . . . .x . .	Second data address field (used with bit 6; valid only for Transfer PIU command). 1=Second address in MBXDATA2. 0=No second address.
	. . . . . .x .	Send response requested by MOSS (when bit 5=1). 1=Send positive response. 0=Send negative response.
		Bit 5 and 6 combinations: 00=Second data address field is invalid. 01=Reserved. 10=Send negative response to host using the buffer pointed to by MBXDATA2 and the sense code in MBXSENSE. 11=Send positive response to host using the buffer pointed to by MBXDATA2; then send Reply PIU using MBXDATAD.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
16(10)		Status bytes.
MBXSTAT	17(11)	
MBXSTAT1	MBXSTAT2	
1.	. . . . .	Request is accepted. (In/Out)
1. . . 1. .	. . . . .	Keep the buffers or data. (Out)
1. . . .1 . .	. . . . .	Free the buffers or data. (Out)
.1	. . . . .	Request is rejected. (In/Out)
.1	1.	Buffers not available. (In)
.1	.1	Function not supported. (In)
.1	. .1	Invalid command. (In/Out)
.1	. . .1	MOSS down or MOSS offline. (In)
.1	. . . . 1. . .	Invalid parameters. (In/Out)
.1	1	MOSS unable to queue SNA request (Out).
. .xx	. . . . .	Reserved.
. xx	. . . . .	Reserved.
. . . . .	. . . . .xx .	Reserved.

		NCP Writes / MOSS Reads																	NCP Reads / MOSS Writes										
		Mailbox Request																	Mailbox Response										
																			Mailbox Status (Hex)										
																			Rejected						Accepted				
																			4001	4008	4010	4020	4040	4080	8000	8400	8800		
Code (Hex)	Mailbox Commands	Control	Data Length	Data Address	General Purpose Field A	PIU TH Byte 0	Number Buffers Required	General Purpose Field B	PIU RH Byte 0	Second Data Address	General Purpose Field C	PIU RU Byte 0	General Purpose Field D	PIU RU Byte 1	General Purpose Field E	PIU RU Byte 2	Sense Code	General Purpose Field F	General Purpose Field G	Scanner Address	General Purpose Field H	Unable to Queue SNA Request	Invalid Parameters	MOSS Down or Offline	Invalid Command	Function Not Supported	CCU Buffers Not Available	Request Accepted	Free Buffers or Data	Keep Buffers or Data	Status Address	
	Description / Displacement (Hex)	1	2–3	4–7	8	8	8	9	9	9–B	A	A	B	B	C	C	C–D	D	E	E–F	F					10–11				14–17	
06	Transfer PIU–REQMS	1100 0000	0	†PIU		X			X			X		X		X		0	0		0	X			X					X	0	Out Mailbox (NCP to MOSS)
	Transfer PIU–DISPSTOR	1100 0000	0	†PIU		X			X			X		X		X		0	0		0	X			X					X	0	
07	Box Error Record (BER)	1100 0000	0	†BER	0			0			0		0		0			0	0		0				X				X	X	0	
08	Buffers Now Available	0	0	0	0			0			0		0		0			0	0		0				X			X			0	
09	Wrap Test Results	1100 0000	0	†Result Buf	0			0			0		0		0			0	0		0				X				X	X	0	
0C	Time/Date Validation	0	0	0	0			0			0		0		0			0	0		0				X			X			0	
23	CP Parameters Available	1000 0000	CPIT leng	†CPIT	0			0			0		0		0			0	0		0				X			X			0	
24	Request Hardware CDS	1000 0000	CDS leng	†CDS	0			0			0		0		0			0	0		0				X			X			0	
25	CP Initialization Complete	0	0	0	0			0			0		0		0			0	0		0				X			X			0	
41	Control Program Loaded	0	0	0	0			0			0		0		0			0	0		0				X			X			0	
42	Roll-In Saved Storage	0	Roll leng	†Roll-In	0			0			0		0		0			0	0		0				X			X			0	
86	REQMS Negative Response	0000 0100	0	0	0					†REQMS							X		0		0		X	X	X		X	X			0	In Mailbox (MOSS to NCP)
	REQMS Pos Resp & RECFMS	1100 0110	0	†RECFMS	0					†REQMS					0			0	0		0		X	X	X		X	X			0	
	Unsolicited RECFMS	1100 1000	0	†RECFMS	0			0			0		0		0			0	0		0		X	X	X	X	X	X			0	
	DISPSTOR Negative Response	0000 0100	0	0	0					†DISPSTOR							X		0		0		X	X	X		X	X			0	
	DISPSTOR Pos Resp & RECSTOR	1100 0110	0	†RECSTOR	0					†DISPSTOR					0			0	0		0		X	X	X		X	X			0	
89	Wrap Test	1100 0000	0	†Request Buf	0			0			0		0		0			0	0		0		X	X	X		X	X			0	
8D	Connect Scanner	0	0	0	0			0			0		0		0			0		X			X	X	X		X	X			0	
8E	Request Buffer	0	0	0			X	0			0		0		0			0	0		0		X	X	X		X	X			†Buffer	
8F	Free Buffer	1100 0000	0	†Buffer	0			0			0		0		0			0	0		0		X	X	X			X			0	
90	MOSS Offline	0	0	0	0			0			0		0		0			0	0		0			X	X			X			0	
91	MOSS Online	0	0	0	0			0			0		0		0			0	0		0				X		X	X			†CPIT	
A3	CP Parameters Saved	0	0	0	0			0			0		0		0			0	0		0				X			X			0	
A4	CDS Information Available	1000 0000	CDS leng	†CDS	0			0			0		0		0			0	0		0				X			X			0	
C1	Scanner IPL Complete	1000 0000	CSP list	†CSP list	0			0			0		0		0			0	0		0				X			X			0	
C2	Roll-In Complete	1000 0000	Roll leng/0	†Roll-In	0			0			0		0		0			0	0		0				X			X			0	
		NCP Reads / MOSS Writes																	NCP Writes / MOSS Reads										

X = Valid field or status for that command

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MACHINE CONFIGURATION TABLE MCT

Program: NCP, EP, PEP

Size in bytes: 196 (C4) plus prefix.

Created by: Shared code module CXASCB call the generating macro CXTMCT.

Pointer to MCT: L1BMCTP field in the L1B.

Function: Contains identification information about all boards in the controller. This includes masks for initiating PIO operations to retrieve error information from the redrive cards for the boards and from the adapters attached to the boards.

The MCT is laid out in subblocks of 16 bytes, one for each possible board in the controller. This table is filled in during initialization by CXFCDSIN by taking the necessary data directly from the CDS subset passed by MOSS. The address of each board subblock is calculated by transforming the redrive address.

−4(−4)	
MCTNBD Number of boards installed	MCTL1BP Pointer to level 1 control block (L1B)

Common format for each subblock of 16 bytes. See table for offsets.

n MCTTYPE* Board type.	n+1 MCTID* Board ID.	n+2 MCTRDVM* TA mask for redrive.	
n+4 MCTCA* CAs installed on board.	n+5 MCTCSP1* Identifier for first CSP on board.	n+6 MCTCSP2* Identifier for second CSP on board.	n+7 MCTL1BOF* L1B offset to a halfword that contains redrive error registers for the corresponding board.
n+8 MCTCSPM1* Mask to read CSP1 error register.		n+10 MCTLNVT LNVT address of the first line on the board.	
n+12 Reserved		n+14 MCTCPM2* Mask to read CSP2 error register.	

*Indicates a byte expansion follows.

Table of Field Offsets by Board Type

Field Name	Offset to Field									
	FDRV Board	LAB4 Board	LAB5 Board	LAB6 Board	LAB7 Board	LAB8 Board	CLAB1 Board	CLAB2 Board	LAB3 Board	CAB Board
MCTTYPE	0(0)	48(30)	64(40)	80(50)	96(60)	112(70)	128(80)	144(90)	160(A0)	176(B0)
MCTID	1(1)	49(31)	65(41)	81(51)	97(61)	113(71)	129(81)	145(91)	161(A1)	177(B1)
MCTRDVM	2(2)	50(32)	66(42	82(52)	98(62)	114(72)	130(82)	146(92)	162(A2)	178(B2)
MCTCA	**	**	**	**	**	**	132(84)	148(94)	**	180(B4)
MCTCSP1	**	53(35)	69(45)	85(55)	101(65)	117(75)	133(85)	149(95)	165(A5)	**
MCTCSP2	**	54(36)	70(46)	86(56)	102(66)	118(76)	134(86)	150(96)	166(A6)	**
MCTL1BOF	7(7)	55(37)	71(47)	87(57)	103(67)	119(77)	135(87)	151(97)	167(A7)	183(B7)
MCTCSPM1	**	56(38)	72(48)	88(58)	104(68)	120(78)	136(88)	152(98)	168(A8)	**
MCTCSPM2	**	62(3E)	78(4E)	94(5E)	110(6E)	126(7E)	142(8E)	158(9E)	174(AE)	**

Bytes 16(10) through 47(2F) are reserved.

**—Reserved byte when not applicable to that board.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
n MCTTYPE		Board type.
	10.	Board not installed.
	. .00 0001	CLAB.
	. .00 0010	CAB.
	. .00 0100	LAB.
	. .00 1000	Frame redrive (FDRV).
n+1 MCTID		Board identifier.
	0000 0001	CLAB1 if MCTTYPE=X'01'.
	0000 0010	CLAB2 if MCTTYPE=X'01'.
	0000 0011	C2LB if MCTTYPE=X'01'.
	0000 0001	LAB type A if MCTTYPE=X'04'.
	0000 0010	LAB type B if MCTTYPE=X'04'.
	0000 0000	For CAB and FDRV.
n+2 MCTRDVM		TA mask for redrive.
	X'4080'	CLAB1 or C2LB mask.
	X'4082'	CLAB2 mask.
	X'4084'	LAB3 mask.
	X'4086'	CAB mask.
	X'4180'	FDRV mask.
	X'4186'	LAB4 mask.
	X'4188'	LAB5 mask.
	X'418A'	LAB6 mask.
	X'418C'	LAB7 mask.
	X'418E'	LAB8 mask.
n+4 MCTCA		CAS installed on board.
	0000 0000	No CAs installed.
	1	CA position 1 installed.
	. . . . . .1 .	CA position 2 installed.
	. . . . .1 . .	CA position 3 installed.
	. . . . 1. . .	CA position 4 installed.
	. . .1	CA position 5 installed.
	. .1	CA position 6 installed.
		If multiple CAs are installed on a board, the values are ORed.
n+5 MCTCSP1 n+6 MCTCSP2		Identifier for first/second CSP on board.
	x	1=CSP not installed. 0=CSP installed.
	000	CSP on CLAB or LAB A.
	010	CSP on LAB B.
	001	CSP on C2LB.
	0 . .x	1=CSP2. 0=CSP1.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
n+7 MCTL1BOF		L1B offset to a halfword that contains redrive error registers for the corresponding board.
	X'2E'	Offset into L1B for FDRDV.
	X'34'	Offset into L1B for LAB4.
	X'36'	Offset into L1B for LAB5.
	X'38'	Offset into L1B for LAB6.
	X'3A'	Offset into L1B for LAB7.
	X'3C'	Offset into L1B for LAB8.
	X'3E'	Offset into L1B for CLAB1 or C2LB.
	X'40'	Offset into L1B for CLAB2
	X'42'	Offset into L1B for LAB3
	X'44'	Offset into L1B for CAB.
n+8 MCTCSPM1		Mask for Get-Error-Status operation to CSP #1 on LAB type B.
	X'1011'	CLAB1 or C2LB mask.
	X'1111'	CLAB2 mask.
	X'1211'	LAB3 mask.
	X'1311'	LAB4 mask.
	X'1411'	LAB5 mask.
	X'1511'	LAB6 mask.
	X'1611'	LAB7 mask.
	X'1711'	LAB8 mask.
n+14 MCTCSPM2		Mask for Get-Error-Status operation to CSP #2 on LAB type B.
	X'2011'	CLAB1 or C2LB mask.
	X'2111'	CLAB2 mask.
	X'2211'	LAB3 mask.
	X'2311'	LAB4 mask.
	X'2411'	LAB5 mask.
	X'2511'	LAB6 mask.
	X'2611'	LAB7 mask.
	X'2711'	LAB8 mask.

MOSS INTERFACE CONTROL BLOCK — MIF

Program: NCP

Size in bytes: 72(48)

Created by: CXASCB, the shared control block module.

Pointer to MIF: SYSMIFP field at X'7B8' in XDA.

Function: Contains the outbound—, hold—, and cleanup QCBs, and status and control information for the maintenance and operator subsystem (MOSS).

0(0) Reserved	1(1) MIFCTRL1* Mailbox mgr. control byte 1. (Down/offline processing control)	2(2) MIFCTRL2* Mailbox mgr. control byte 2. (Wrap test state)	3(3) MIFCTRL3* Mailbox mgr. control byte 3.
4(4) MIFLIFAD Line interface address.		6(6) MIFTMOUT Timeout count.	7(7) MIFTMEXP Timeout expired.
8(8) MIFXFERC* Dump transfer control flags.	9(9) MIFSNPM SNP mask for dump requester.	10(A) MIFALERT* Alert user action qualifier.	11(B) Reserved
12(C) MIFWRPP Pointer to the level 5 wrap manager control block (WRP).			

MOSS Outbound QCB (MIFOBQCB)

16(10) MIMMCBD Major control block displacement divided by 2.	MIM1ECB Pointer to the first element in the outbound queue.
20(14) MIMLECB Pointer to the last element in the outbound queue.	
24(18) MIMLINK Pointer to the next QCB in the outbound queue.	
MIMPRKEY Protection key.	
28(1C) MIMSTAT *Task and* queue status.	29(1D) Reserved

*Indicates a byte expansion follows.

Hold QCB (MIFHQQCB)

32(20) MIHMCBD Major control block displacement divided by 2.	MIH1ECB Pointer to the first element in the hold queue.
36(24) MIHLECB Pointer to the last element in the hold queue.	
40(28) MIHLINK Pointer to the next QCB in the hold queue.	
MIHPRKEY Protection key.	
44(2C) MIHSTAT Task and queue status.	45(2D) Reserved

Cleanup QCB (MIFCUQCB)

48(30) MICMCBD Major control block displacement divided by 2.	MIC1ECB Pointer to the first element in the cleanup queue.
52(34) MICLECB Pointer to the last element in the cleanup queue.	
56(38) MICLINK Pointer to the next QCB in the cleanup queue.	
MIMPRKEY Protection key.	
60(3C) MICSTAT Task and queue status.	61(3D) Reserved.

Mailbox Trace Facility

64(40)	MIFMTFP
	Pointer to the mailbox trace facility (MTF).
68(44)	MIFENTRY
	Pointer to the next available entry in MTF.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
1(1) MIFCTRL1		Mailbox manager control byte 1. (Down/Offline processing control).
	1.	MOSS down/offline in progress.
	.1	Send SSCP alert message.
	. .1	Send stop wrap.
		(Bits 3 through 6 reserved.)
	1	Set wrap preprocessing.
2(2) MIFCTRL2		Mailbox manager control byte 2. (Wrap test state).
	1.	Global wrap in progress.
	.11	Wrap test is active.
	. . . 1	Reset in progress.
	. . . . 1. . .	Stop wrap in progress.
	X'00'	Wrap in reset.
	X'80'	Wrap initialization in progress.
	X'90'	Wrap reset in progress.
	X'A0'	Wrap test is running.
	X'C0'	Wrap initialized.
3(3) MIFCTRL3		Mailbox manager control byte 3.
	1.	Out-mailbox is busy.
		(Bits 1 through 7 reserved.)
8(8) MIFXFERC		Dump transfer control flags.
	.1	Dump request came from EP.
		(Bits 0, 2 through 7 reserved.)
10(A) MIFALERT		Alert user action qualifier.
	X'C1'	NCP detected time-out.
	X'C2'	NCP detected interface error.
	X'C3'	MOSS detected inoperative.

MIGRATION INDEX TABLE — MIT

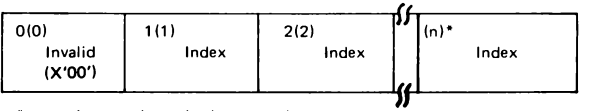
Program: NCP

Size in bytes: Variable length; dependent upon the maximum number of subareas in the network.

Created by: NCP generation.

Pointed to by: CXTMIT in the link-edit map or the SYSMITP field in HWE + 120(78).

Function: Contains indexes into the migration vector table (MVT). The desired MIT displacement is found by adding the subarea address (in the DAF) to the location of the MIT (CXTMIT). The index in the MIT entry multiplied by 8 yields the actual displacement into the MVT for the associated resource.



n* = maximum subarea in the network.

SDLC MONITOR MODE LINK MLT

Program: NCP

Size in bytes: Variable.

Created by: NCP generation.

Pointer to MLT: CXTMLT in link-edit map.

Function: Contains entries for each SDLC link to be monitored.

0(0) MLTSTAT* Monitor mode link status.	1(1) INOP or contacted byte.	2(2) MLTSEQN Function manager data sequence number
4(4) MLTLKBP Pointer to the LKB. One entry for each link to be monitored.		
n(n) MLTEND Zeros indicate end of MLT.		

*Indicates a byte expansion follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) MLTSTAT		SDLC monitor mode link status.
	1...	Activate link pending.
	.1..	Activate link complete.
	..1.	Contact pending.
	...1	Contact complete.
	.... 1...	Activate link error.

MAILBOX TRACE FACILITY MTF

Program: NCP, EP, PEP

Size in bytes: 32 entries of 32(20) bytes each plus one ending byte for a total of 1025(401) bytes.

Created by: CXASCB calling macro CXTMIF to generate the MIF. The MTF immediately follows the MIF control block.

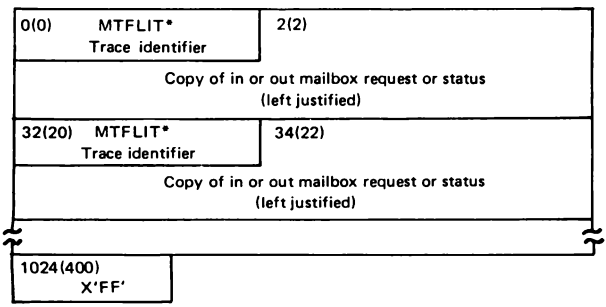
Referenced by: CXAMINTR, CXAMXFER, CXAMINTS, and CXAMDNOF.

Located in: CXASCB, the shared module.

Pointer to MTF: MIFMTFP field in the MIF control block.

Function: Each mailbox trace entry contains a trace identifier followed by one of the following:

- In-mailbox request and status.
- Out-mailbox request (no status).
- Out-mailbox status (no request).
- MOSS down request.



Note: Each byte that is not traced for the current entry (no status or no request) will contain a X'F0'.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
MTFFLIT	Characters	Trace identifier
	'IS'	In-mailbox request and status.
	'O '	Out-mailbox request.
	' S'	Out-mailbox status.
	'DN'	MOSS Down request.

MIGRATION VECTOR TABLE MVT

Program: NCP

Size in bytes: 8(8) for each subarea.

Created by: NCP generation.

Pointed to by: CXTMVT in the link-edit map, SYSMVTP field in HWE + 124(7C), or the migration index table (MIT).

Function: Contains the address of the RVT if the subarea is local or the address of the SCB if the subarea is routed to over a link. The first entry in the table is an invalid entry. The last entry contains X'FF' in MVTTYPE1. The MVT is used to route migration PIUs over the boundary function.

0(0) MVTTYPE1* Subarea type byte 1	1(1) MVTTYPE2* Subarea type byte 2	2(2) Reserved
4(4) MVTENT Address of RVT or SCB		

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Names and Bit Patterns		Contents
0(0) MVTTYPE1	1(1) MVTTYPE2	
....	0...	RVT entry (see RVT DSECT).
....	1x..	MVT entry. x=1 Remote subarea =0 Local subarea
Local Subarea		
x.....	10y.	x=1 RVT has SNA resources. =0 RVT does not have SNA resources. y=1 RVT has BSC/SS resources. =0 RVT does not have BSC/SS resources.
Remote Subarea (SNA)		
0x..	111.	x=1 Adjacent subarea. =0 Tandem subarea.
0... x...	111.	x=1 Invalid. =0 MVTENT points to an SCB.
0... ...x	111.	x=1 subarea does not contain an SSCP. =0 subarea contains an SSCP.

PROGRAMMED RESOURCE LOGICAL UNIT BLOCK NLB

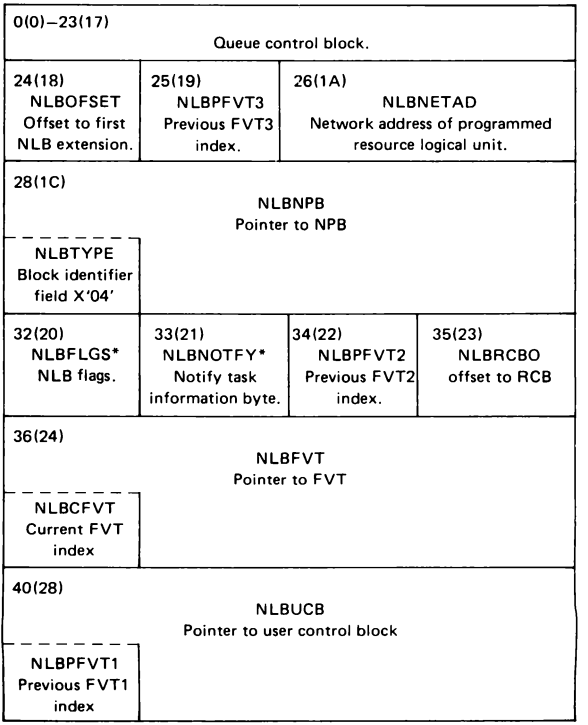
Program: NCP

Size in bytes: 44(2C)

Created by: NCP generation

Pointer to NLB: LUVLUB field in LUV, RVTRP field in RVT

Function: Contains information about a programmed resource logical unit.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
32(20) NLBFLGS		NLB flags
	x.	Reserved
	.1	Resource is eligible for NPA data collection.
33(21) NLBNOTFY		Notify task information byte
	1. . .	Resource undergoing ANS.
	.1 . .	Resource entered held state.
	. .1 .	Resource exited held state.
	. . .1	Deactivate virtual route status received.
	. . . . 1. . .	Virtual route inoperative status received.
	. . . . .1 . .	Lost session partner.

Note: NLBOFSET must have the same displacement in the NLB as LULOFSET has in the LUB. The NLB fields must remain in the same relative positions as their counterparts in the LUB, NLX, NPB, and VLB.

PROGRAMMED RESOURCE LOGICAL UNIT BLOCK EXTENSION — NLX

Program: NCP

Size in bytes: 44(2C)

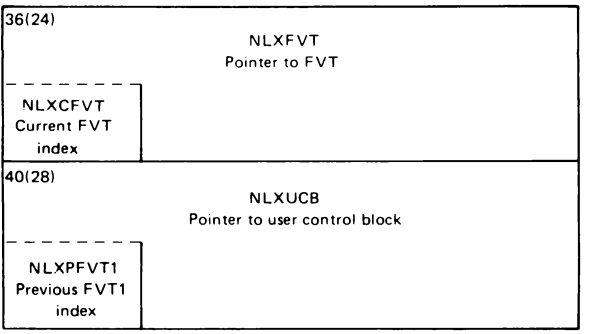
Created by: NCP generation.

Pointer to NLX: NLB via offset in NLBOFSET field.

Function: Contains information about a programmed resource logical unit.

<table>
<tr><td colspan="4">0(0)-23(17)
Queue control block</td></tr>
<tr><td>24(18)
NLXOFSET
Offset to next NLX extension</td><td>25(19)
NLXPFVT3
Previous FVT3 index</td><td colspan="2">26(1A)
NLXSPART
Network address of session partner</td></tr>
<tr><td colspan="4">28(1C)
NLXNLB
Pointer to associated NLB.</td></tr>
<tr><td>NLXTYPE
Block identifier field X'08'</td><td colspan="3"></td></tr>
<tr><td>32(20)
NLXTNUM
Number of this extension</td><td>33(21)
NLXNOTFY*
Notify task information byte</td><td>34(22)
NLXPFVT2
Previous FVT2 index</td><td>35(23)
NLXRCBO
Offset to RCB</td></tr>
</table>

*Indicates a byte expansion follows.



Note: NLXOFSET must have the same displacement in the NLX as LUAOFSET in the LU-LU process queue control block of the LUB and NLXSPART must have the same displacement as LUASPART. The NLX fields must remain in the same relative positions as their counterparts in the NLB, NPB, and VLB.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
33(21) NLXNOTFY		Notify task information byte
	1...	Resource undergoing ANS.
	.1..	Resource entered held state.
	..1.	Resource exited held state.
	...1	Deactivate virtual route status received.
	.... 1...	Virtual route inoperative status received.
	.... .1..	Lost session partner.

PROGRAMMED RESOURCE PHYSICAL UNIT BLOCK NPB

Program: NCP

Size in bytes: 48(30)

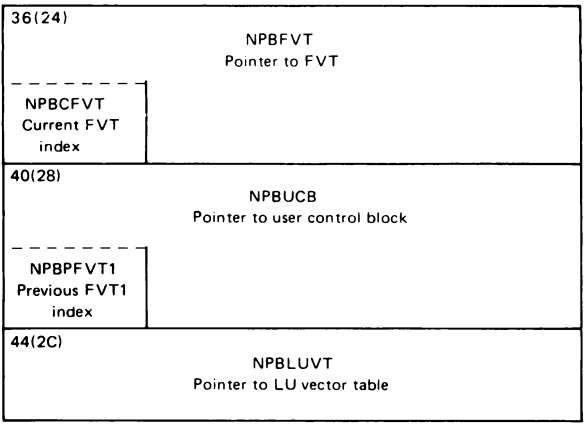
Created by: NCP generation

Pointer to NPB: PUVCUB field in PUV, NLBNPB field in NLB, RVTRP field in RVT

Function: Contains information about a programmed resource physical unit.

0(0)-23(17) Queue control block.			
24(18) Reserved	25(19) NPBPFVT3 Previous FVT3 index.	26(1A) NPBNETAD Network address of programmed resource physical unit	
28(1C) NPBVLB Pointer to VLB			
NPBTYPE Block identifier field X'02'			
32(20) NPBSNP SNP mask—Identifies owning SSCP	33(21) NPBNOTFY* Notify task information byte	34(22) NPBPFVT2 Previous FVT2 index.	35(23) NPBRCBO Offset to RCB

*Indicates a byte expansion follows.



Note: The NPB fields must remain in the same relative positions as their counterparts in the NLX, NLB, and VLB.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
33(21) NPBNOTFY		Notify task information byte
	1...	Resource undergoing ANS.
	.1..	Virtual route entered held state.
	..1.	Virtual route exited held state.
	...1	Deactivate virtual route status received.
	.... 1...	Virtual route inoperative status received.
	.... .1..	Lost session partner.

NETWORK PERFORMANCE ANALYZER PREFIX NPF

Program: NCP

Size in bytes: Variable (up to 12 bytes) depending upon the control block.

Located in: The beginning of the CUB, DVB, LCB, LKB, LUB, NLB, or PSB if the resource is eligible for NPA.

Function: Contains status information and the pointer to the counter queue element (See NQE).

For LCB Control Block

−12(−C) NPFABRCV Temporary characters received counter.	−10(−A) NPFABSNT Temporary characters sent counter.

For LCB and LKB Control Blocks

−8(−8) NPFACTCT Active resource counter.	−7(−7) NPFABFLG* Link processing flags.	−6(−6) Reserved

For CUB, DVB, LCB, LKB, LUB, NLB, and PSB Control Blocks

−4(−4) NPFFLAGS* Collection type indicators.	NPFQUEL Pointer to counter queue element. (NQE)

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
−7(−7) NPFABFLG		Line processing flags.
	1.	Block received (BSC) indicator.
−4(−4) NPFFLAGS		Collection type indicators.
	1.	Message data being acquired.
	.1	Character data being acquired.
	. .1	Poll data being acquired.
	. . .1 . . .	Error data being acquired.
	. . . . 1. . .	Retransmission data being acquired.
	. . . . .1 . .	Queue length data being acquired.
	. . . . . x .	Reserved.
	1	Poll sent indicator. For Communication Control Unit (CCU) collection.
	1.	CCU utilization data being acquired.
	.1	Buffer data being acquired.
	. .1	Channel queue data being acquired.

NPA COUNTER QUEUE BLOCK — NQB

Program: NCP

Size in bytes: 104(68)

Created by: NCP Generation

Pointer to NQB: SYSNQBP (100(64)) in HWE control block.

Function:: Controls the accumulation and forwarding of NPA statistics.

NQB Header

<table>
<tr><td colspan="3">0(0)
NQBTIME
NPA time value</td></tr>
<tr><td colspan="2">4(4)
NQBPSQN
PIU sequence number for LU-LU.</td><td>6(6)
NQBPACE
Pacing count.</td></tr>
<tr><td colspan="2">8(8)
NQBPACNT
Number of PIUs sent since pacing response request.</td><td>10(A)
NQBLMTNO
Number of queue elements.</td></tr>
<tr><td>12(C)
NQBAVLCT
Number of queue elements available.</td><td>14(E)
NQBCOLBC
Needed buffers to build 256 byte PIU.</td><td>15(F)
NQBWCNT
VR window count.</td></tr>
<tr><td colspan="3">16(10)
NQBC0TOP
First free queue element</td></tr>
<tr><td colspan="3">20(14)
NQBC0BOT
Last free queue element</td></tr>
<tr><td colspan="3">24(18)
NQBC1TOP
Top of interval queue 1</td></tr>
<tr><td colspan="3">28(1C)
NQBC1BOT
Bottom of interval queue 1</td></tr>
</table>

32(20)	NQBC2TOP Top of interval queue 2
36(24)	NQBC2BOT Bottom of interval queue 2
40(28)	NQBC3TOP Top of interval queue 3
44(2C)	NQBC3BOT Bottom of interval queue 3
48(30)	NQBC4TOP Top of interval queue 4
52(34)	NQBC4BOT Bottom of interval queue 4
56(38)	NQBC5TOP Top of interval queue 5
60(3C)	NQBC5BOT Bottom of interval queue 5
64(40)	NQBC6TOP Top of interval queue 6
68(44)	NQBC6BOT Bottom of interval queue 6
72(48)	NQBC7TOP Top of interval queue 7
76(4C)	NQBC7BOT Bottom of interval queue 7

80(50)	NQBC8TOP Top of interval queue 8
84(54)	NQBC8BOT Bottom of interval queue 8
88(58)	NQBC9TOP Top of interval queue 9
92(5C)	NQBC9BOT Bottom of interval queue 9
96(60)	NQBCATOP Top of interval queue 10
100(64)	NQBCABOT Bottom of interval queue 10

NPA COUNTER QUEUE ELEMENT — NQE

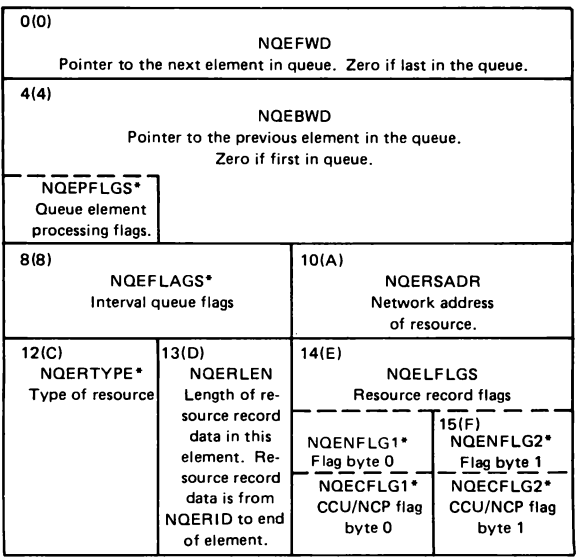
Program: NCP

Size in bytes: 40(28)

Created by: NCP Generation

Pointed to by: The NPA prefix of the resource that will be undergoing NPA collection.

Function: Accumulates the statistics for the resource that is undergoing NPA collection.



*Indicates a byte expansion follows.

16(10) NQELFCC Value for Communication Control Unit (CCU) free cycle count	
NQELUCC Value for CCU used cycle count/8 (CUC format)	
NQELTPS Value for total PIUs sent	18(12) NQELTPR Value for total PIUs received
20(14) NQELTBS Value for total bytes sent	
NQELFBQ Value for free buffer queue length	22(16) NQELFBH Value for free buffer high water mark
24(18) NQELTBR Value for total bytes received	
NQELFBL Value for free buffer low water mark	26(1A) NQELCIQ Value for channel intermediate queue
28(1C) NQELROQ Value for resource outbound	30(1E) NQELTPC Value for total poll count
NQELCHQ Value for channel hold queue	NQELSL Value in tenths of second of time in slowdown
32(20) NQELPPC Value for positive poll count	34(22) NQELERR Value for total error count
NQELSLM Value for buffer count limit for slowdown entry	NQELMXF Maximum available NCP buffers
36(24) NQELRPC Value for retransmitted PIU count	38(26) NQELRBC Value for retransmitted character count
NQELCYS Value for Communication Control Unit (CCU) cycle speed	Reserved

Byte Expansions

Offset/Field Name	Bit Pattern Hex Value	Contents
4(4) NQEPFLGS		Queue element processing flags
	1.	Ignore overflow—PIUs sent count
	.1	Ignore overflow—PIUs received count
	. .1	Ignore overflow—errors count
8(8) NQEFLAGS		Interval queue flags. The flag is on for the queue in which the resource is being collected. All flags are off if on a free queue.
	Byte 0	
		Bits 0 through 5 reserved.
	. . . . .1 .	Queue 10
	1	Queue 9
	Byte 1	
	1.	Queue 8
	.1	Queue 7
	. .1	Queue 6
	. . .1 . . .	Queue 5
	. . . . 1. . .	Queue 4
	. . . . .1 . .	Queue 3
	. . . . . .1 .	Queue 2
	1	Queue 1

Offset/Field Name	Bit Pattern/ Hex Value	Contents
12(C) NQERTYPE		Type of resource whose data is included. CCU=Communications Control Unit.
	1.	CCU/NCP Resource Indicator Bit 7 is always off if bit 0 is on.
	.1	Link or BSC Line. If bit 7=1, the resource is an SDLC link. If bit 7=0, the resource is a BSC line.
	. .1	PU or BSC cluster. If bit 7=1, the resource is an SDLC PU. If bit 7=0, the resource is a BSC cluster.
	. . .1	LU or BSC terminal. If bit 7=1, the resource is an SDLC LU. If bit 7=0, the resource is a BSC terminal.
	. . . . . .1 .	Programmed resource logical unit. Bit 7 is always 1 when bit 6=1.
	1	SNA boundary resource.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
14(E) NQENFLG1		INN and BNN Resources Flag byte 0
	1.	Reserved
	.1	Double overflow has occured. Bits 2 through 6 reserved.
	1	Overflow NQELRBC
15(F) NQENFLG2		Flag byte 1
	1.	Overflow NQELRPC
	.1	Overflow NQELERR
	. .1	Overflow NQELPPC
	. . .1	Overflow NQELTPC
	. . . . 1. . .	Overflow NQELTBR
	. . . . .1 . .	Overflow NQELTBS
	. . . . . .1 .	Overflow NQELTPR
	1	Overflow NQELTPS
14(E) NQECFLG1		Communication Control Unit/NCP (CCU/NCP) Resources CCU/NCP Flag Byte 0
	1.	Communication control unit utilization value is in cycle utilization counter format.
	.1	Double overflow has occured.
15(F) NQECFLG2		CCU/NCP Flag Byte 1
	. . . . . .1 .	Overflow NQELSL
	1	Overflow NQELFCC or NQELUCC

NON SEQUENTIAL QUEUE NSQ

Program: NCP

Size in bytes: 24(18)

Created by: NCP generation.

Pointed to by: CXQNSB in the link-edit map.

Function: The queue provides a path by which function management data FID1 PIUs are passed to the connection point manager-in (CXDCPSI) to be sent to all SSCPs (as required) that are in session with the NCP.

Format: Standard Input QCB.
Task – CXDNEOPS
Priority – Immediate
Reentrant – No

ONLINE TERMINAL TEST CONTROL BLOCK OLTTCB

Program: NCP

Size in bytes: 44(2C)

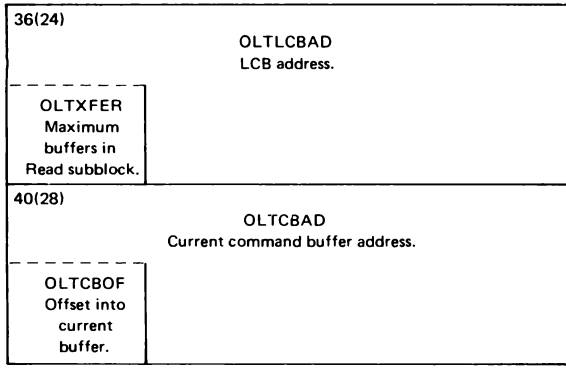
Located in: Dynamically allocated buffer.

Created: When a BTU Test command is received.

Pointer to OLTT: DVBSDRT field in DVB when in online test mode.

Function: Contains status flags and counters from diagnostic I/O operations.

<table>
<tr><td colspan="4">0(0)
OLTCTRS
Counters</td></tr>
<tr><td colspan="4">8(8)
OLTFLGS
Flags. (This field can also be used for counters.)</td></tr>
<tr><td colspan="2">16(10)
OLTSTAT
Status field (same as IOBSTAT).</td><td>18(12)
OLTEXST
Extended status field (same as IOBEXTST).</td><td>19(13)
Reserved</td></tr>
<tr><td>20(14)
OLTPHER
Phase error-converted.</td><td>21(15)
OLTFSTS
First status-converted.</td><td colspan="2">22(16)
OLTFNLS
Final status - converted.</td></tr>
<tr><td colspan="2">24(18)
OLTCCMAD
Current relative command address.</td><td colspan="2">26(1A)
Reserved</td></tr>
<tr><td colspan="4">28(1C)
OLTTEMP
Temporary fullword and halfword work area.</td></tr>
<tr><td colspan="4">32(20)
OLTFBAD
Address of first CBU buffer.</td></tr>
</table>



PU POOL ANCHOR BLOCK PAB

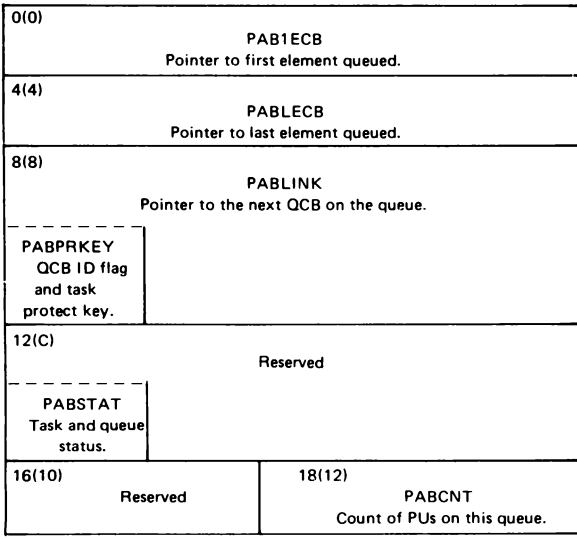
Program: NCP

Size in bytes: 20(14)

Created by: PUDRPOOL or LUDRPOOL in NCP system generation.

Pointer to PAB: SYSPABP field in HWX.

Function: Contains the QCB and count of CUB elements that are in the dynamic reconfiguration pool.



PANEL CONTROL BLOCK PCB

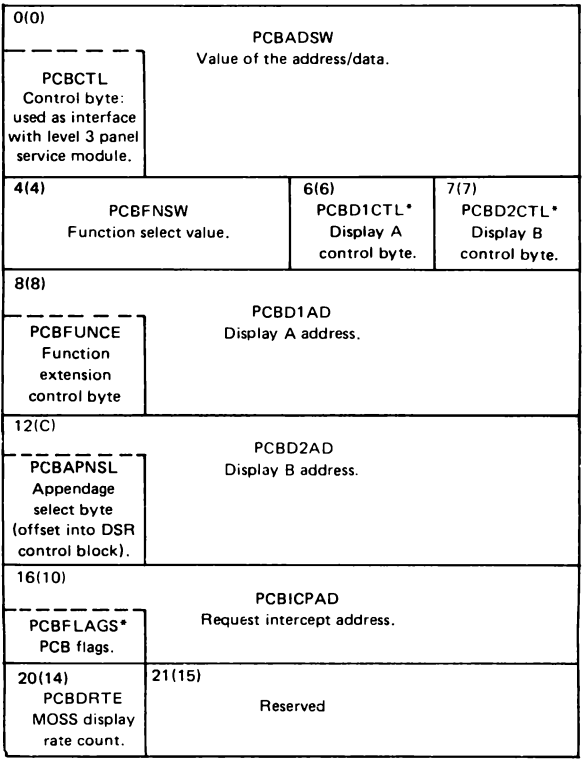
Program: NCP

Size in bytes: 30(1E)

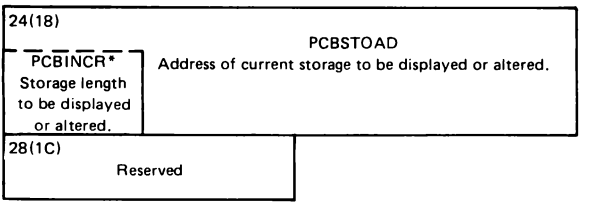
Created by: NCP generation.

Pointer to PCB: SYSPDBP field in HWE.

Function: Provides an area through which information is passed between modules for control panel or console operation.



*Indicates a byte expansion follows.



*Indicates byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
6(6) PCBD1CTL	. . .x	1=Display once and then No-op. 0=Continuous display.
	0000 000.	No-op.
	0000 001.	22-bit direct (PCBD1AD).
	0000 010.	Halfword storage indirect (PCBD1AD).
	0000 011.	22-bit storage indirect (PCBD1AD).
	0000 100.	External register.
	0000 101.	Byte storage indirect (PCBD1AD).
7(7) PCBD2CTL	x	1=Display once and then No-op. 0=Continuous display.
	0000 000.	No-op.
	0000 001.	22-bit direct (PCBD2AD).
	0000 010.	Halfword storage indirect (PCBD2AD).
	0000 011.	22-bit storage indirect (PCBD2AD).
	0000 100.	External register.
	0000 101.	Byte storage indirect (PCBD2AD).
16(10) PCBFLAGS		PCB flags.
	1.	Panel Function 40 in progress. (Bits 1 through 7 reserved).
24(18) PCBINCR		Storage length to be displayed or altered.
	X'01'	Store byte
	X'02'	Store halfword
	X'04'	Store 22-bit word

PATH INFORMATION UNIT (FID0)

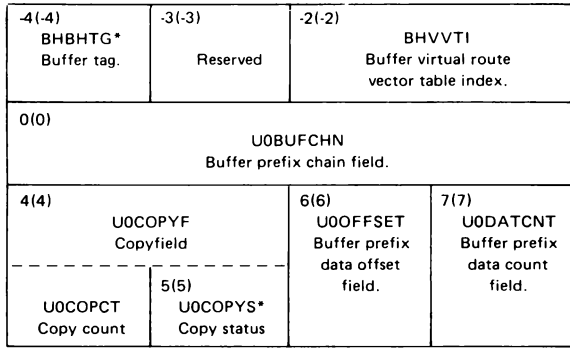
Program: NCP

Size in bytes: 62(3E) plus variable-length text plus prefix.

Function: Basic unit of transmission in the network. The FID0 PIU is used for requests directed to BSC and start-stop devices.

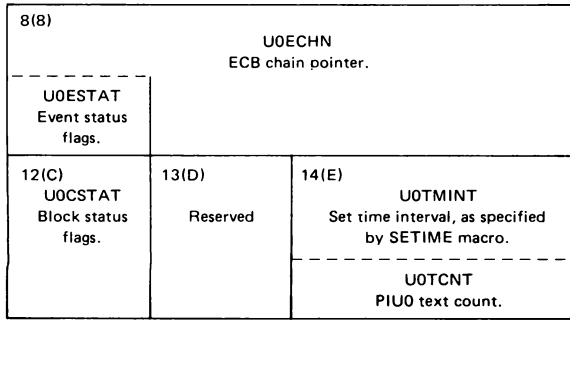
Note: This PIU layout is as it appears in the NCP buffer. The basic PIU begins with the transmission header. See "PIU Formats in NCP Buffers" — foldout following PIU (FIDF) — for the relationship of the buffer offset to the PIU offset as seen in traces.

Buffer Prefix

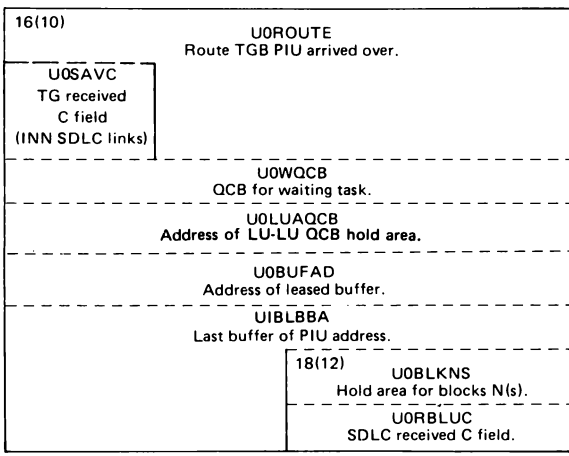


*See buffer prefix (BH) for expansions.

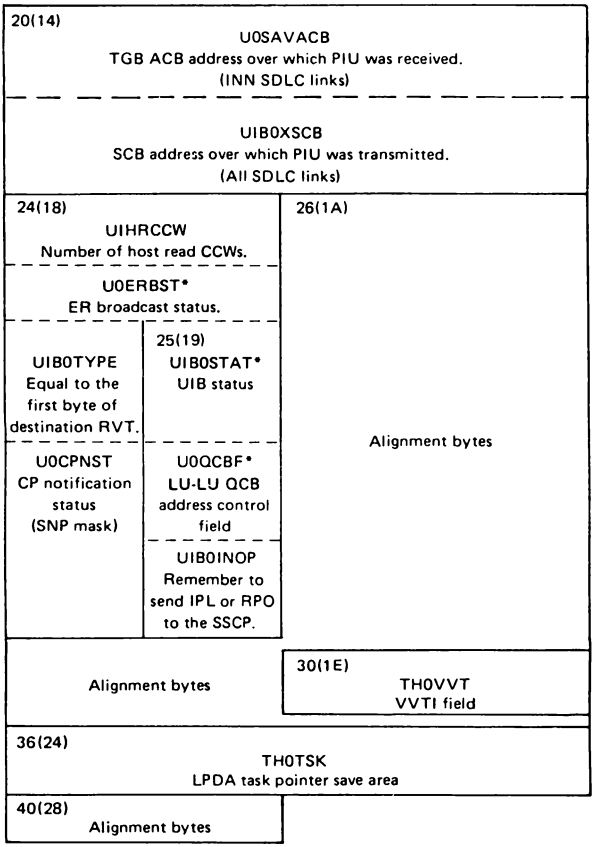
Event Control Block



PIU
(FID0)



Internal Work Area



PIU
(FID0)

Transmission Header (TH)

	42(2A) TH0B0* TH Byte 0	43(2B) Reserved.
44(2C) TH0DAF Destination network address.	46(2E) TH0OAF Origin network address.	
48(30) TH0SNF Sequence number.	50(32) TH0DCF Count (RH + RU).	

Request/Response Header (RH)

52(34) RH0B0* RH byte 0.	53(35) RH0B1* RH byte 1.	54(36) RH0B2 RH byte 2.	55(37) RH0PAD FID0 pad between RH and RU.

Request/Response Unit (RU)

56(38) RU0CMD BTU command. (Refer to Section 3)	57(39) RU0MOD BTU command. modifier. (Refer to Section 3)	58(3A) RU0FLG BTU flags. (Refer to BTU)
60(3C) RU0SRP BTU system response. (Refer to Section 8)	61(3D) RU0LRP BTU extended response. (Refer to Section 8)	62(3E) Text field. (Variable length.)

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) U0ERBST		ER broadcast status
	X'00'	Not suspended.
	X'yy'	Suspended. (Value is the displacement into the SVT.)
25(19) UIB0STAT		UIB status.
	X'80'	Recurrent PIU/sensitive data indicator.
	X'01'	Invalid DAF.
	X'02'	Unrecoverable path error.
	X'03'	Unrecoverable station error.
	X'04'	Invalid DCF.
	X'05'	Incomplete header.
	X'06'	Format error.
25(19) U0QCBF		QCB address control field.
	1. . .	The QCB indicated by U0LUAQCB should be rescheduled (TRIGGER=YES) when the corresponding PIU is sent.
42(2A) TH0B0		Transmission header byte 0.
	. .00	FID0 BSC/SS node.
	x	1=Expedited flow. 0=Normal flow.
52(34) RH0B0		Request/response byte 0.
	x. . .	1=Response. 0=Request.
	x. . .	1=Formatted. 0=Unformatted.
	.x . .	1=Sense data included. (See Section 9) 0=No sense data included.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
53(35) RH0B1		Request/response byte 1.
	1...	Definite response 1 requested/sent.
	...1	Exception response requested/sent.
	.... .1..	Reserved.

PATH INFORMATION UNIT (FID1)

Program: NCP

Size in bytes: 60(3C) plus variable-length text plus prefix.

Function: Basic unit of transmission in the network. The FID1 PIU is used for transmission between the host, local NCP, and remote NCP.

Note: This PIU layout is as it appears in the NCP buffer. The basic PIU begins with the transmission header. See "PIU Formats in NCP Buffers" — foldout following PIU (FIDF) — for the relationship of the buffer offset to the PIU offset as seen in traces.

Buffer Prefix

<table>
<tr><td>-4(-4)
BHBHTG*
Buffer tag.</td><td>-3(-3)
Reserved</td><td colspan="2">-2(-2)
BHVVTI
Buffer virtual route vector table index.</td></tr>
<tr><td colspan="4">0(0)
U1BUFCHN
Buffer prefix chain field.</td></tr>
<tr><td colspan="2">4(4)
U1COPYF
Copy field</td><td rowspan="2">6(6)
U1OFFSET
Buffer prefix data offset field.</td><td rowspan="2">7(7)
U1DATCNT
Buffer prefix data count field.</td></tr>
<tr><td>U1COPCT
Copy count</td><td>5(5)
U1COPYS
Copy status</td></tr>
</table>

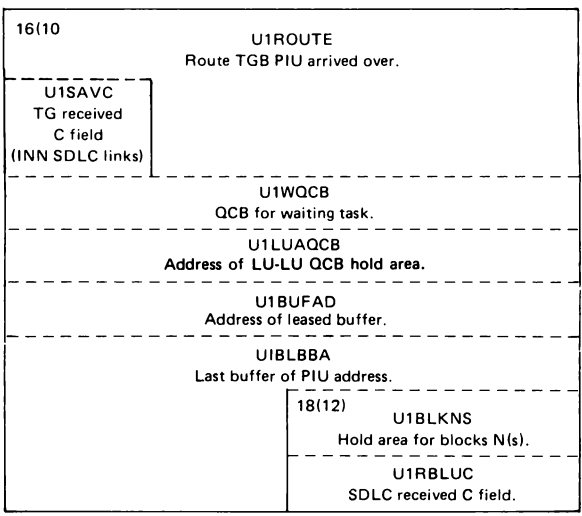
*See the buffer prefix (BH) for expansions.

Event Control Block

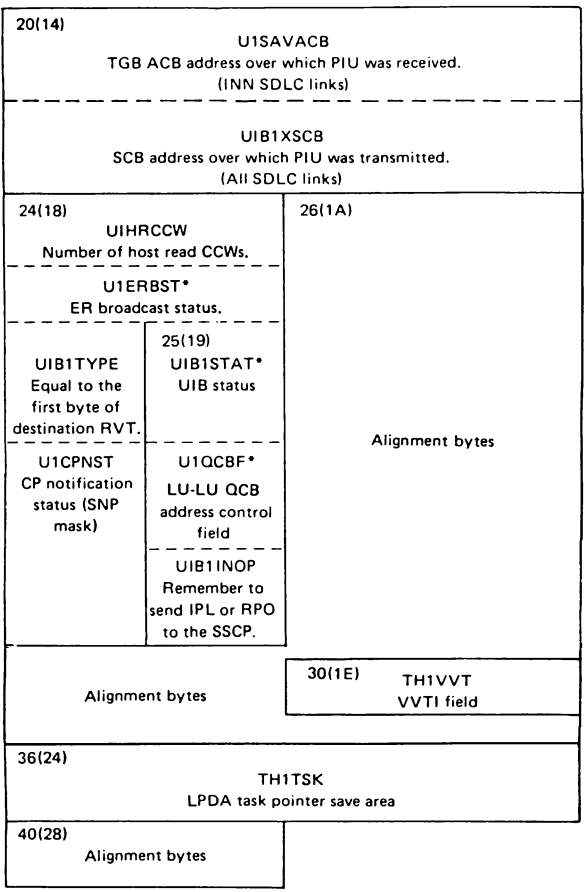
<table>
<tr><td colspan="3">8(8)
U1ECHN
ECB chain pointer.</td></tr>
<tr><td>U1ESTAT*
Event status flags.</td><td colspan="2"></td></tr>
<tr><td rowspan="3">12(C)
U1CSTAT
Block status flags.</td><td rowspan="3">13(D)
Reserved.</td><td>14(E)
U1TMINT
Set time interval, as specified by SETIME macro.</td></tr>
<tr><td>U1END1
Queued SDLC status.</td></tr>
<tr><td>U1TCNT
PIU1 text count.</td></tr>
</table>

*Refer to ECBESTAT field of the event control block.

PIU
(FID1)



Internal Work Area



*Indicates a byte expansion follows.

Transmission Header

Note: Correlate fields between the FID1 and FID4 by address only.

	42(2A) TH1B0* TH byte 0.
43(2B) Reserved.	
44(2C) TH1DAF Destination network address.	46(2E) TH1OAF Origin network address.
48(30) TH1SNF Sequence number.	50(32) TH1DCF Count (RH + RU).

Request/Response Header (RH)

52(34) RH1B0* RH byte 0. (See Section 5)	53(35) RH1B1* RH byte 1.	54(36) RH1B2* RH byte 2.

Request/Response Unit (RU)
(General format for all commands not listed after the RU)

		55(37) RU1BT0 1st byte of prefix for SSCP-FM requests. (Refer to Section 5)
		RU1RC0 Request code for non SSCP-FM requests. (Refer to Section 5)
56(38) RU1BT1 2nd byte of prefix for SSCP-FM requests. (Refer to Section 5)	57(39) RU1RC2 Request code for SSCP-FM requests. (Refer to Section 5)	58(3A) RU1NA* Network address for SSCP-FM requests.

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) **U1ERBST**		ER broadcast status
	X'00'	Not suspended.
	X'yy'	Suspended. (Value is the displacement into the SVT.)
25(19) UIB1STAT		UIB status.
	X'80'	Recurrent PIU/sensitive data indicator.
	X'01'	Invalid DAF.
	X'02'	Unrecoverable path error.
	X'03'	Uncoverable station error.
	X'04'	Invalid DCF.
	X'05'	Incomplete header.
	X'06'	Format error.
		For PEP Switch
	X'00'	Good switch.
	X'01'	Good switch.
	X'02'	Line trace active.
	X'03'	Line active.
	X'04'	Panel line test active.
	X'05'	Wrap active.
	X'06'	Postponed processing.
	X'07'	Transparent mode waiting for host write (EP only).
	X'09'	Already switched.
25(19) U1QCBF		QCB address control field
	1...	The QCB indicated by U1LUAQCB should be rescheduled (TRIGGER=YES) when the corresponding PIU is sent.
42(2A) TH1B0		Transmission header byte 0.
	..01	FID1 intermediate node.
	.... 01..	Last segment.
	10..	First segment.
	11..	Only segment.
	.... 00..	Middle segment.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	.... ..1.	Primary-to-secondary flow.
	.... ..0.	Secondary-to-primary flow.
	1	Expedited flow.
	0	Normal flow.
52(34) RH1B0		Request/response byte 0.
	1...	Response.
	0...	Request.
	.00.	Function management data — See Section 5
	.01.	Network control — See Section 5
	.10.	Data flow control — See Section 5
	.11.	Session control — See Section 5
	.... 1...	Formatted.
	.... 0...	Unformatted.
	.... .1..	Sense data included. (See section 9)
	.... .0..	No sense data.
	11	Only element.
	10	First element.
	01	Last element.
	00	Middle element.
53(35) RH1B1		RH byte 1.
	1...	Definite response 1 requested/sent.
	..1.	Definite response 2 requested/sent.
	...1	Exception response requested/sent.
	.... .1..	Reserved.
	1	Pace.
54(36) RH1B2		RH byte 2.
	1...	Begin bracket.
	.1..	End bracket.
	..1.	Change direction (HDX only).
	...1	Request change of direction.
	.... .1..	Logging.
58(3A) RU1NA		SSCP-FM LSA reason code.
	Byte 0	
	X'01'	Unexpected physical outage.
	X'02'	Controlled node disconnected.

PATH INFORMATION UNIT (FID2)

Program: NCP

Size in bytes: 60(3C) plus variable-length text plus prefix.

Function: Basic unit of transmission in the network. The FID2 PIU is used for transmission between the NCP and the cluster control unit.

Note: This PIU layout is as it appears in the NCP buffer. The basic PIU begins with the transmission header. See "PIU Formats in NCP Buffers" — foldout following PIU (FIDF) — for the relationship of the buffer offset to the PIU offset as seen in traces.

Buffer Prefix

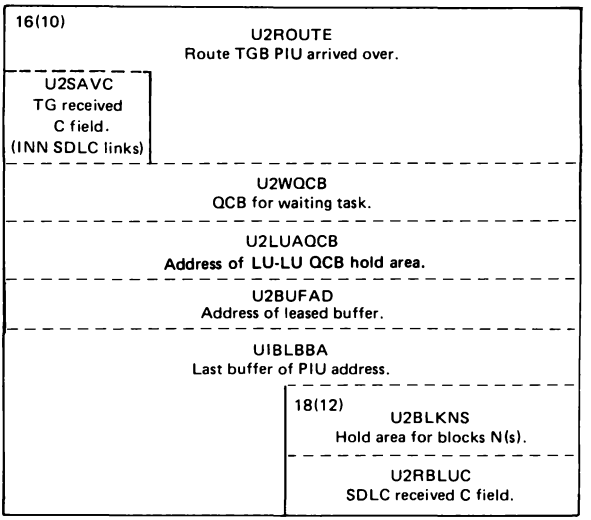
-4(-4) BHBHTG* Buffer tag.	-3(-3) Reserved	-2(-2) BHVVTI Buffer virtual route vector table index.	
0(0) U2BUFCHN Buffer prefix chain field.			
4(4) U2COPYF Copy field		6(6) U2OFFSET Buffer prefix data offset field.	7(7) U2DATCNT Buffer prefix data count field.
U2COPCT Copy count	5(5) U2COPYS Copy status		

*See the buffer prefix (BH) for expansions.

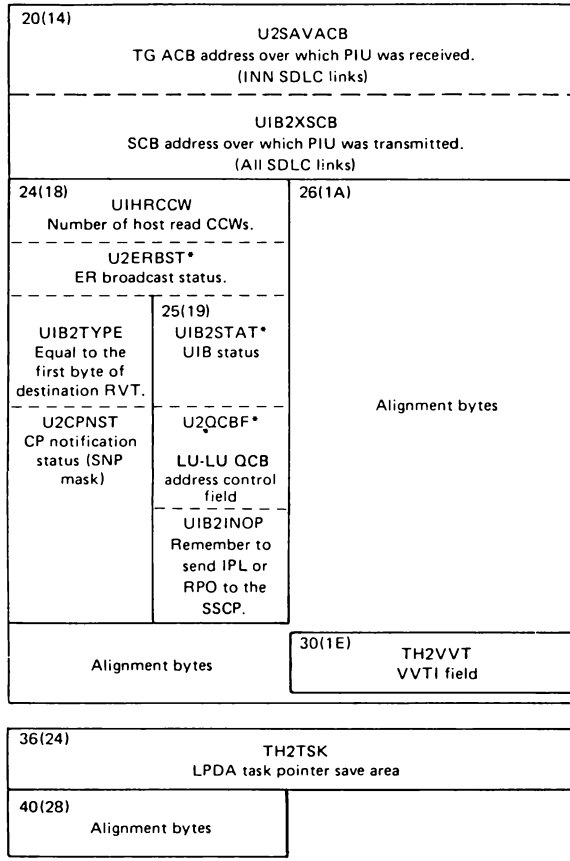
Event Control Block

8(8) U2ECHN ECB chain pointer.		
U2ESTAT Event status flags.		
12(C) U2CSTAT Block status flags.	13(D) Reserved	14(E) U2TMINT Set time interval as specified by SETIME macro.
		U2TCNT PIU2 text count.

PIU
(FID2)



Internal Work Area



Transmission Header

		46(2E) TH2B0* TH byte 0.	47(2F) Reserved
48(30) TH2DAF Destination network address.	49(31) TH2OAF Origin network address.	50(32) TH2SNF Sequence number field.	

Request/Response Header (RH)

52(34) RH2B0* RH byte 0. (See Section 5).	53(35) RH2B1* RH byte 1.	54(36) RH2B2* RH byte 2.

*Indicates a byte expansion follows.

Request/Response Unit (RU)

			55(37) RU2BT0 1st byte of prefix for SSCP-FM requests. (Refer to Section 5) - - - - - - - - - RU1RC0 Request code for non SSCP-FM requests. (Refer to Section 5)
56(38) RU2BT1 2nd byte of prefix for SSCP-FM requests. (Refer to Section 5)	57(39) RU2RC2 Request code for SSCP-FM requests. (Refer to Section 5)	58(3A) RU2NA Network address for SSCP-FM requests.	

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) U2ERBST		ER broadcast status
	X'00'	Not suspended.
	X'yy'	Suspended. (Value is the displacement into the SVT.)
25(19) UIB2STAT		UIB status.
	X'80'	Recurrent PIU/sensitive data indicator.
	X'01'	Invalid DAF.
	X'02'	Unrecoverable path error.
	X'03'	Unrecoverable station error.
	X'04'	Invalid DCF.
	X'05'	Incomplete header.
	X'06'	Format error.
25(19) U2QCBF		QCB address control field.
	1...	The QCB indicated by U2LUAQCB should be rescheduled (TRIGGER=YES) when the corresponding PIU is sent.
46(2E) TH2B0		Transmission header byte 0.
	..10	FID2 cluster node.
	.... 01..	Last segment.
	.... 10..	First segment.
	.... 11..	Only segment.
	.... 00..	Middle segment.
	x	1=Expedited flow. 0=Normal flow.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
52(34) RH2B0		Request/response byte 0.
	x. . .	1=Response. 0=Request.
	.xx .	00=Function management data. 01=Network control. 10=Data flow control. 11=Session control. (See Section 5)
	. . . . x. . .	1=Formatted. 0=Unformatted.
	. . . . .x . .	1=Sense data included. (See Section 9.) 0=No sense data.
	 11	Only element.
	 10	First element.
	 01	Last element.
	 00	Middle element.
53(35) RH2B1		RH byte 1
	1.	Definite response 1 requested/sent.
	. .1	Definite response 2 requested/sent.
	. . .1	Exception response requested/sent.
	. . . . .1 . .	Reserved.
	1	Pace.
54(36) RH2B2		RH byte 2
	1.	Begin bracket.
	.1	End bracket.
	. .1	Change direction (HDX only).
	. . .1	Request change direction.
	. . . . 1. . .	Reserved.
	. . . . .1 . .	Logging.

PATH INFORMATION UNIT (FID3)

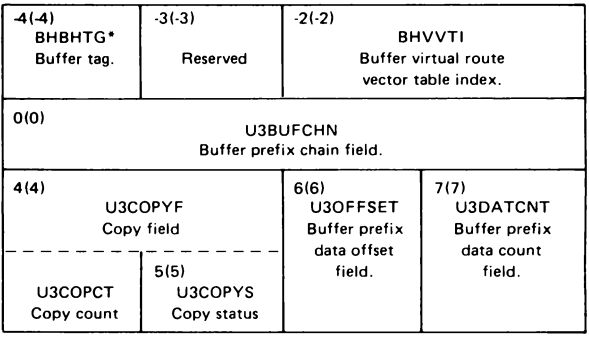
Program: NCP

Size in bytes: 60(3C) plus variable-length text plus prefix.

Function: Basic unit of transmissions in the network. The FID3 PIU is used for transmission between the NCP and a terminal node.

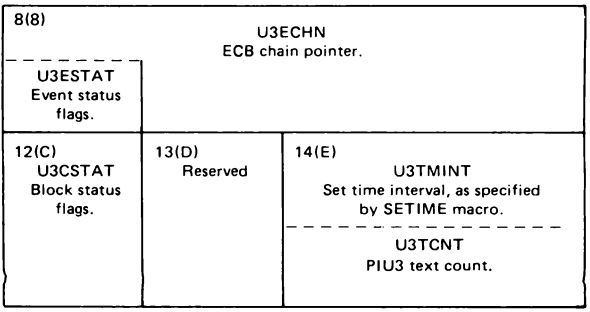
Note: This PIU layout is as it appears in the NCP buffer. The basic PIU begins with the transmission header. See "PIU Formats in NCP Buffers" – foldout following PIU (FIDF) – for the relationship of the buffer offset to the PIU offset as seen in traces.

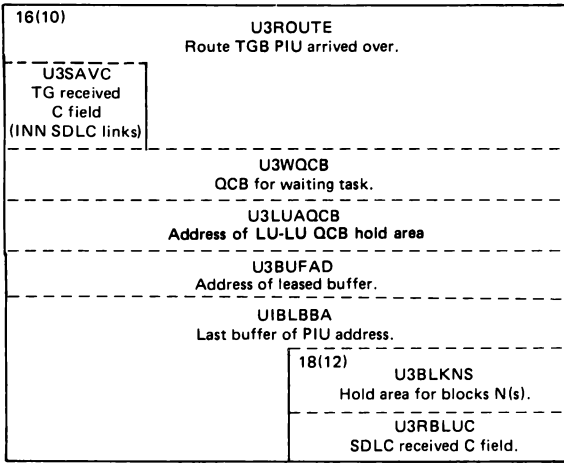
Buffer Prefix



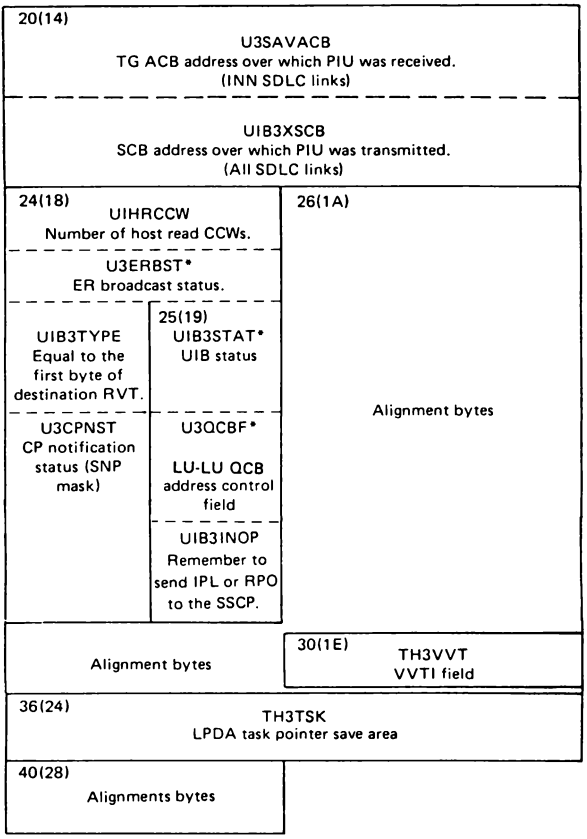
*See the buffer prefix (BH) for expansions.

Event Control Block





Internal Work Area



Transmission Header

50(32) TH3B0* TH byte 0.	51(33) TH3DAOF* Local session ID.

Request/Response Header (RU)

52(34) RH3B0* RH byte 0 (See Section 5)	53(35) RH3B1* RH byte 1	54(36) RH3B2* RH byte 2

*Indicates a byte expansion follows.

Request/Response Unit (RU)

			55(37) RU3BT0 1st byte of prefix for SSCP-FM requests. (Refer to Section 5)
			RU1RC0 Request code for non SSCP-FM requests. (Refer to Section 5)
56(38) RU3BT1 2nd byte of prefix for SSCP-FM requests. (Refer to Section 5)	57(39) RU3RC2 Request code for SSCP-FM requests. (Refer to Section 5)	58(3A) RU3NA Network address for SSCP-FM requests.	

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) U3ERBST		ER broadcast status
	X'00' X'yy'	Not suspended. Suspended. (Value is the displacement into the SVT.)
25(19) UIB3STAT		UIB status.
	X'80'	Recurrent PIU/sensitive data indicator.
	X'01' X'02' X'03' X'04' X'05' X'06'	Invalid DAF. Unrecoverable path error. Unrecoverable station error. Invalid DCF. Incomplete header. Format error.
25(19) U3QCBF		QCB address control field.
	1...	The QCB indicated by U3LUAQCB should be rescheduled (TRIGGER=YES) when the corresponding PIU is sent.
50(32) TH3B0		Transmission header byte 0
	..11	FID3 terminal node.
	.... 01..	Last segment.
	10..	First segment.
	.... 11..	Only segment.
	00..	Middle segment.
	x	1=Expedited flow. 0=Normal flow.
51(33) TH3DAOF		Local session ID.
	x...	1=to/from LU. 0=to/from SSCP.
	.x..	1=to/from logical unit. 0=to/from physical unit.
	..xx xxxx	Local address of station.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
52(34) RH3B0		Request/response byte 0.
	x. . .	1=Response. 0=Request.
	.xx	00=Function management data 01=Network control. 10=Data flow control. 11=Session control. (See Section 5)
	. . . . x. . .	1=Formatted. 0=Unformatted.
	. . . . .x . .	1=Sense data included. (See Section 9.) 0=No sense data.
	11	Only element.
	10	First element.
	01	Last element.
	00	Middle element.
53(35) RH3B1		Request/response byte 1.
	1.	Definite response 1 requested/sent.
	. .1	Definite response 2 requested/sent.
	. . .1	Exception response requested/sent.
	. . . . .1 . .	Reserved.
	1	Pace.
54(36) RH3B2		Request/response byte 2.
	1.	Begin bracket (BB)
	.1	End bracket (EB)
	. .1	Change direction (HDX only).
	. . . . x. . .	Code selection indicator. 0=EBCDIC 1=ASCII

PATH INFORMATION UNIT (FID4)

Program: NCP

Size in bytes: 60(3C) plus prefix.

Function: Basic unit of transmissions in the network. The FID4 PIU is used for traffic flowing on virtual routes.

Note: This PIU layout is as it appears in the NCP buffer. The basic PIU begins with the transmission header. See "PIU Formats in NCP Buffers" – foldout following PIU (FIDF) – for the relationship of the buffer offset to the PIU offset as seen in traces.

Buffer Prefix

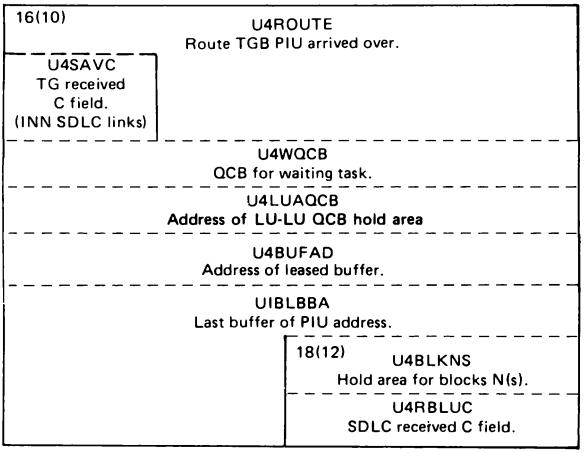
<table>
<tr><td>-4(-4)
BHBHTG*
Buffer tag.</td><td>-3(-3)
Reserved</td><td colspan="2">-2(-2)
BHVVTI
Buffer virtual route vector table index.</td></tr>
<tr><td colspan="4">0(0)
U4BUFCH
Buffer chain pointer.</td></tr>
<tr><td colspan="2">4(4)
U4COPYF
Copy data field</td><td rowspan="2">6(6)
U4OFFSET
Buffer prefix data offset.</td><td rowspan="2">7(7)
U4DATCNT
Buffer prefix data count.</td></tr>
<tr><td>U4COPCT
Copy count (Multi-link TG only)</td><td>5(5)
U4COPYS*
Copy status</td></tr>
</table>

*See the buffer prefix (BH) for expansions.

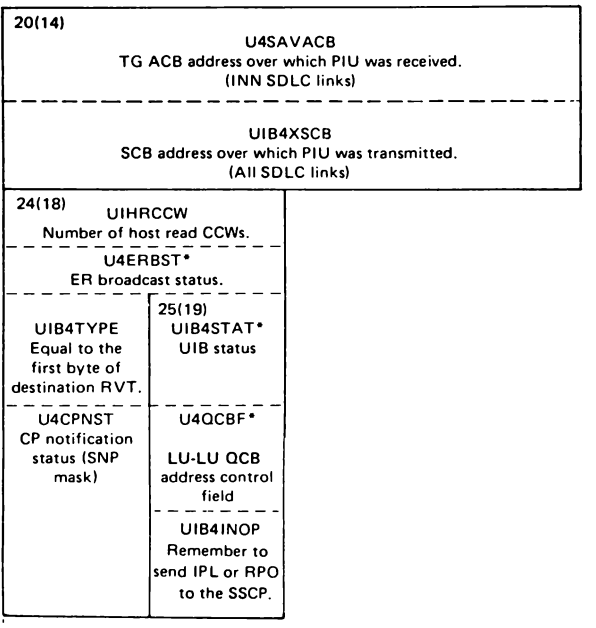
Event Control Block

<table>
<tr><td colspan="3">8(8)
U4ECHN
ECB chain pointer.</td></tr>
<tr><td>U4ESTAT
Event status.</td><td colspan="2"></td></tr>
<tr><td>12(C)
U4CSTAT
Block status flags.</td><td>13(D)
Reserved</td><td>14(E)
U4TCNT
PIU text count.
U4TMINT
Set time interval.</td></tr>
</table>

PIU
(FID4)



Internal Work Area



*Indicates a byte expansion follows.

Transmission Header
(FID4 to FID1 correlation begins at address 42(2A))

		26(1A) TH4B0* TH byte 0.	27(1B) Reserved
28(1C) TH4B2* TH byte 2.	29(1D) TH4B3* TH byte 3.	30(1E) TH4TGSNF Transmission group sequence number. (Last 12 bits of the halfword.)	
		TH4VVTI Virtual route vector table index.	
		TH4VRCF* Virtual routing control.	
32(20) TH4NSSEQ Send sequence number. (Last 12 bits of halfword.)		34(22) TH4DSAF Destination subarea address. (See next halfword also.)	
TH4PACE* Pacing control field.			
36(24) TH4DSAF Destination subarea address. (Continued)		38(26) TH4OSAF Origin subarea address. (See next halfword also.)	
40(28) TH4OSAF Origin subarea address. (Continued)		42(2A) TH4B16* TH byte 16.	43(2B) Reserved
44(2C) TH4DEF Destination element address.		46(2E) TH4OEF Origin element address.	
48(30) TH4SNF Sequence number field.		50(32) TH4DCF Data count field. (RU + RH)	

Request/Response Header

52(34) RH4B0* RH byte 0. (See Section 5.)	53(35) RH4B1* RH byte 1.	54(36) RH4B2* RH byte 2.

*Indicates a byte expansion follows.

Request/Response Unit

			55(37) RU4BT0 1st byte of prefix for SSCP-FM requests. (Refer to Section 5.) - - - - - - - - RU4RC0 Request code for non SSCP-FM requests. (Refer to Section 5.)
56(38) RU4BT1 2nd byte of prefix for SSCP-FM requests. (Refer to Section 5.)	57(39) RU4RC2 Request code for SSCP-FM requests. (Refer to Section 5.)	58(3A) RU4NA* Network address for SSCP-FM requests.	

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) U4ERBST		ER broadcast status
	X'00'	Not suspended.
	X'yy'	Suspended. (Value is the displacement into the SVT.)
25(19) UIB4STAT		UIB status
	X'80'	Recurrent PIU/sensitive data indicator.
	X'01'	Invalid DAF.
	X'02'	Unrecoverable path error.
	X'03'	Unrecoverable station error.
	X'04'	Invalid DCF.
	X'05'	Incomplete header.
	X'06'	Format error.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
25(19) U4QCBF		QCB address control field.
	1...	The QCB indicated by U4LUAQCB should be rescheduled (TRIGGER=YES) when the corresponding PIU is sent.
26(1A) TH4B0		Transmission header byte 0
	.100	FID4 transit network
	.... 1...	Transmission group sweeping.
	.... .1..	Migration mode.
	.... ..1.	Pacing count is zero (end bit).
	1	PIU to flow on network priority.
28(1C) TH4B2		Transmission header byte 2
	xxxx	Initial explicit route number.
	 xxxx	Explicit route number.
29(1D) TH4B3		Transmission header byte 3
	xxxx	Virtual route number.
	xx	Transmission priority. 00=low 01=medium 10=high
	xxxx ..xx	Virtual route identifier (VRID)
30(1E) TH4VRCF		Virtual routing control field
	x...	CWI 1=decrement pacing-group size. 0=increment pacing-group size.
	.0..	Transmission group reorder required.
	..xx	Virtual route sequence and type indicator. 00=non-sequenced, non-supervisory. 01=non-sequenced, supervisory 10=singly sequenced

Offset/Field Name	Bit Pattern/ Hex Value	Contents
32(20) TH4PACE		Pacing control field
	1...	Virtual route pacing request is on.
	.1..	Virtual route pacing response is on.
	..x.	CWRI 1=decrement pacing-group size by 1. 0=increment pacing-group size by 1 if this virtual route end-point has already sent all PIUs for current pacing group.
	...1	RWI Reset pacing-group size to specified minimum.
42(2A) TH4B16		Transmission header byte 16
	...x	1=SNA device 0=non-SNA device
	.... xx..	01=last segment 10=first segment 11=only segment 00=middle segment
	x	1=expedited flow 0=normal flow
52(34) RH4B0		Request/response byte 0.
	1...	Response.
	0...	Request.
	.00.	Function management data (See Section 5)
	.01.	Network control (See Section 5)
	.10.	Data flow control (See Section 5)
	.11.	Session control (See Section 5)
	...x	1=Against flow. 0=With flow.
	.... 1...	Formatted.
	.... .1..	Sense data included. (See Section 9.)
	.... .0..	No sense data.
	11	Only element.
	10	First element.
	01	Last element.
	00	Middle element.

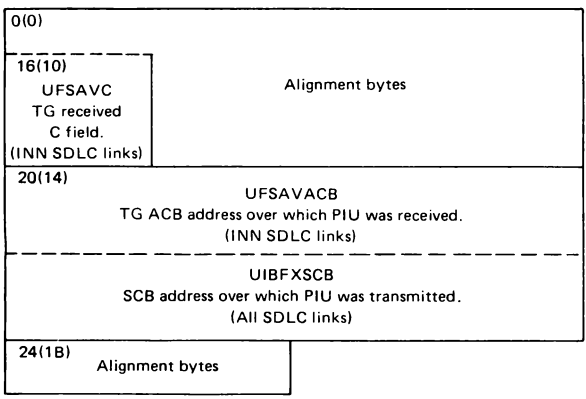
PATH INFORMATION UNIT (FIDF)

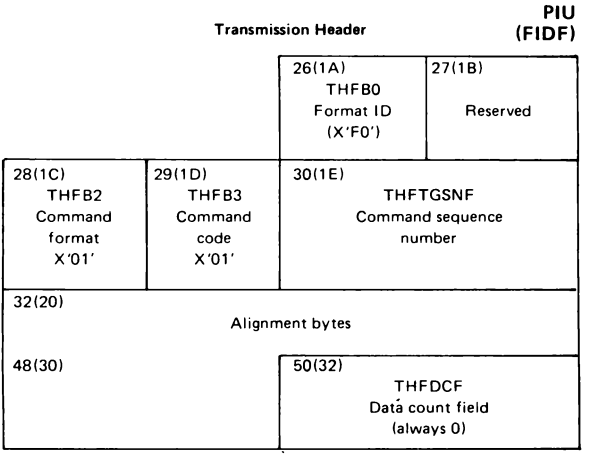
Program: NCP

Size in bytes: 52(34)

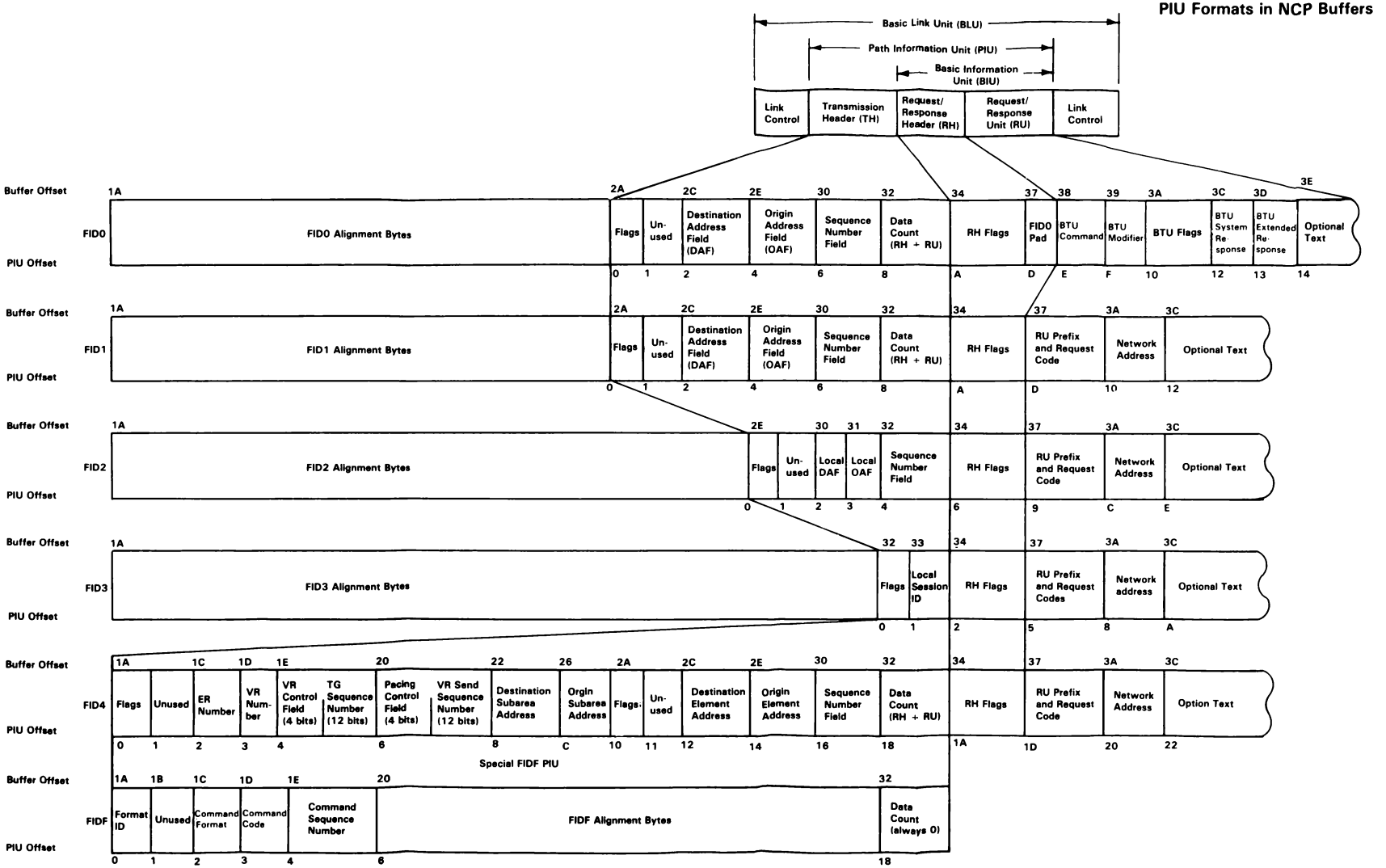
Function: A special PIU that is sent by the receiver to notify the sender that all PIUs have been received and forwarded. One way this occurs is when a sequence-number field overflow envokes the sweep function that suspends passing PIUs from the FLBXQCB transmit queue to the associated links in a multilink TG until all outstanding PIUs are acknowledged at the SDLC level.

Note: This PIU layout is as it appears in the NCP buffer. The basic PIU begins with the transmission header. See "PIU Formats in NCP Buffers" – foldout following PIU (FIDF) – for the relationship of the buffer offset to the PIU offset as seen in traces.





Note: There is no request/response header (RH) nor request/response unit (RU).



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PERFORMANCE MEASUREMENT FACILITY PMF

Program: NCP

Size in bytes: 12(C)

Location: $LVL5

Created by: NCP generation.

Pointer to PMF: SYSPMFMP field in XDA,SYSPMF field in HWX.

Function: Displays percent cycle utilization and percent available NCP free buffers, points to the cycle utilization counter (CUC) dummy data buffer (DDB) and the NCB free-buffer statistics DDB, and has global response bytes for the DDBs.

0(0) PMFGRSPU* Global response, CUC.	1(1) PMFPCUC Hexadecimal percent cycle utilization, CUC	2(2) PMFGRSPF* Global response, NCP free buffers.	3(3) PMFPFBF Hexadecimal percent available NCP free-buffers.
4(4) PMFCUC Pointer to cycle utilization counter's (CUC's) dummy data buffer (DDB).			
8(8) PMFFBFRS Pointer to NCP free-buffers statistics DDB			

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) PMFGRSPU		Global response
	1...	Input (domain) limit value exceeded.
	.1..	Ceiling threshold(s) exceeded.
	..1.	Floor threshold(s) exceeded.
	...1	Last hexadecimal counter-stage processing turned off.
	.... 1...	Don't care-defined only in DDB.
	.... .1..	Don't care-defined only in DDB.
	.... ..1.	Chaining was indicated but chain pointer was 0 or not valid.
	1	Percent calculation not done, scale value was bad (not 0, 1, or 10).
2(2) PMFGRSPF		Same as PMFGRSPU

PARAMETER/STATUS AREA CONTROL BLOCK
Normal Mode

PSA
(NCP)
(Normal)

Program: NCP

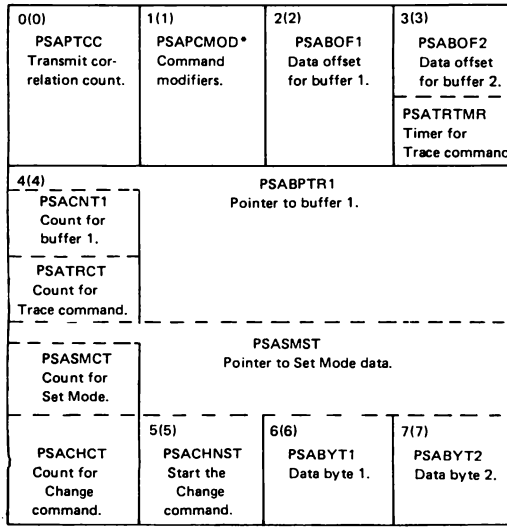
Size in bytes: 32(20)

Created by: NCP generation.

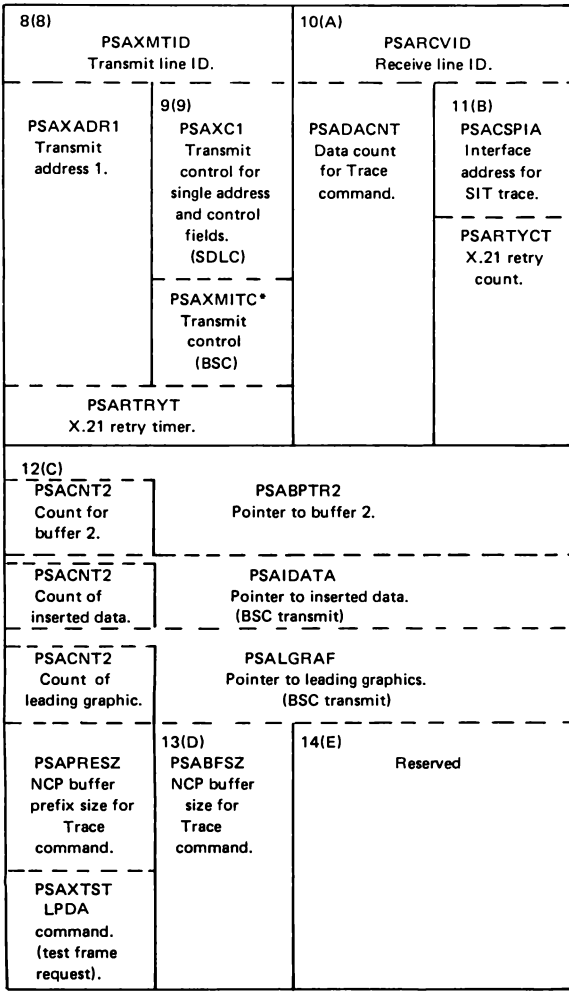
Pointer to PSA: LNVTPSAP field in LNVT (points to the transmit PSA for duplex lines); LNVTPSAR points to the receive PSA.

Function: Contains a parameter area used to transfer control information from the CCU to the scanner and a status area used to transfer status information from the scanner to the CCU. For duplex operation, two PSAs are required; one for the transmit leg and one for the receive leg. See the PSA foldouts for a summary of the parameter and status fields used by each valid command.

Normal Mode and Common Commands Parameter Area



PSA (NCP) (Normal)



*Indicates a byte expansion follows.

PSA
(NCP)
(Normal)

Status Area

16(10) PSASSCF* Status control field.	17(11) PSACMD* Command.	18(12) PSASES* Secondary status.	19(13) PSALSTAT* (PSALCS) Line communication status.
20(14) PSARSCNT Residual buffer count.	PSALBUFP Pointer to last buffer used.		
		22(16) PSAINLD* Input leads from modem.	23(17) PSAOUTLD* Output leads to modem.
24(18) PSARADR1 Receive address 1. (SDLC)	25(19) PSARC1 Receive control for single address and control fields. (SDLC)	26(1A)	27(1B)
PSARTMRR Residual timer. (SIT)			
PSASSCF2 LPDA secondary control field 2.	PSACMD2 LPDA command 2.	PSASES2 LPDA secondary ending status 2.	PSALSTA2 LPDA line communication status 2.
Initial line communication status. (X.21)	PSARTCNT Residual retry count. (X.21)	PSASCPS1 First Call Progress Signal. (X.21)	PSASCPS2 Second Call Progress Signal. (X.21)
28(1C)			
PSAACBF* ACB flag.	PSAACBP Pointer to the ACB or the GCB (for user line control) or the LTCB (when the ACB flag is on).		

*Indicates a byte expansion follows.

Byte Expansions

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
1(1) PSAPCMOD		Command modifiers
	x...	Buffer 1 data (to/from NCP) is in a: 1=Data area 0=Buffer chain
	.x..	Buffer 2 data (to/from NCP) is in a: 1=Data area 0=Buffer chain, or SIT—Duplex
	..1.	SDLC/LPDA—2-byte address field, or X.21—Retry requested, or BSC—Second transparent write for OLTT
	...1	SDLC/LPDA—2-byte control field, or BSC—NCP OLTT
	.... 1...	SDLC—Do not compare address, or BSC—ITB mode, or Wrap—1=Control leads wrap 0=Data wrap
	.... .1..	SDLC—Answer requested, or BSC—Data chain (xmit) or start reply timer (control), or LPDA—Long reply timeout, or Wrap—1=External wrap 0=LIC level wrap
	.... ..1.	SDLC (HDX)—Turn line around, or SDLC (Duplex)—Drop RTS, or X.21—Direct call, or BSC—Insert data, or Wrap—1=Modem clock used 0=Cable (480Hz clock)
	1	SDLC (HDX)—Receive area assigned (or) BSC—ACK expected 1=ACK1 0=ACK0

Offset/ Field Name	Bit Pattern/ Hex Value		Contents
9(9) PSAXMITC			Transmit control (BSC) Bits 0, 1, 2=Initial control sequence (ICS) Bits 3 through 6=Final control sequence (FCS) Bit 7=Leading graphics flag.
	FCS	LG	
ICS=000 (Control)	0000	0	Turn line around and monitor.
	0011	Y	Transmit ENQ, then turn line around and receive response.
	0110	Y	Transmit ACK-0, then turn line around and receive.
	0111	Y	Transmit NAK, then turn line around and receive.
	1101	0	Transmit RVI, then turn line around and receive.
	1110	Y	Transmit ACK-1, then turn line around and receive.
	1111	0	Transmit WACK, then turn line around and receive.
ICS=001 (STX)	0011	0	Transmit STX-ENQ (TTD), then turn line around and receive.
	1001	0	Transmit STX-data-ETX, then turn line around and receive.
	1010	0	Transmit STX-data-ETB, then turn line around and receive.
	FCS	LG	
ICS=010 (DLE-STX)	0011	0	Transmit DLE-STX-data-DLE-ENQ, then turn line around and receive.
	0100	0	Transmit DLE-STX-data-DLE-ITB (no line turnaround)
	1001	0	Transmit DLE-STX-data-DLE-ETX, then turn line around and receive.
	1010	0	Transmit DLE-STX-data-DLE-ETB, then turn line around and receive.
ICS=011 (SOH)	1001	0	Transmit SOH-data-ETX, then turn line around and receive.
	1010	0	Transmit SOH-data-ETB, then turn line around and receive.

Y in bit 7 indicates leading graphics are possible.

Offset/ Field Name	Bit Pattern/ Hex Value		Contents
ICS=100 (EOT)	0000	0	Transmit EOT, then turn line around and monitor.
	0011	Y	Transmit EOT, then send ENQ, turn line around, and receive reply.
	1100	0	Transmit EOT, then turn line around and request a level 2 interrupt.
	1110	0	Transmit DLE-EOT, then turn line around and request a level 2 interrupt.

Y in bit 7 indicates leading graphics are possible.

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
16(10) PSASSCF		Status control field.
	1.	Halt or Abort received.
	.1.	Service request.
	. . 1. . . .	Overrun or underrun.
	. . . 1	Modem check.
	. . . . 1. . .	Received data stored.
	. . . . . 1 . .	End of message.
	. . . . . 1.	Transmit data transferred.
	 1	Receive sequence.
17(11) PSACMD	See Note	Normal Mode Commands
		SDLC Commands
	X'10'	Transmit Control
	X'11'	Transmit Data
	X'12'	Receive Monitor
	X'13'	Receive
	X'14'	Receive Continue
	X'1D'	Transmit Continue
		X.21 Commands
	X'15'	Call Request
	X'16'	Monitor Incoming Call
	X'17'	DTE Clear Request
		BSC Commands
	X'18'	Control
	X'19'	Transmit
	X'1A'	Transmit Continue
	X'1B'	Receive
	X'1C'	Receive Continue
		LPDA Command
	X'2B'	LPDA Test Control
		Commands Common to Normal and Character Mode
	X'01'	Set Mode
	X'02'	Enable
	X'03'	Disable
	X'04'	Monitor Incoming Call
	X'05'	Dial (Normal mode only)
	X'06'	Change
	X'08'	Raise Data Terminal Ready
	X'09'	Flush Data (Normal mode only)

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
	See note	
	X'0B'	Reset-D (Reset and Disable)
	X'0C'	Reset-N (Reset and NOOP)
	X'2C'	Trace (Start) (Normal mode only)
	X'2D'	Stop Trace (Normal mode only)
	X'2E'	Wrap
	X'F0'	Halt
	X'F1'	Halt Immediate
	X'F5'	Line Dump.
18(12) PSASES		Secondary status
	1...	Reserved
	.1..	Format exception, or SDLC—Idle detect.
	..1.	Reserved
	...1	Data check
	.... 1...	BSC—Bad pad, or SDLC—Flag off boundary.
	.... .1..	In phase (EP only)
	.... ..1.	DLE error
	1	Length check, or SDLC—Early flag
19(13) PSALSTAT (PSALCS)		Line communication status. 0 1 2 3 4 5 6 7 └┘ └──┘ └┘ Initial status Final status Leading graphics
		Initial Status Field NCP BSC Receive only
	000.	Control mode—no text received.
	001.	Text mode—STX is first character.
	010.	Transparent text mode—DLE STX are first characters.
	011.	Header mode—SOH is first character.
		Special
	100.	Special status.
		Errors
	110.	Internal box error.
	111.	Hardware error.

Note: NCP sets bit 0 to 1 on an Out IOH. A level 2 interrupt from the CSP sets bit 0 to 0. If bit 0=1, the level 2 interrupt from the current command never occurred.

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
		Final Status Field
		Initial Status=0XX
	...0 000.	Time-out occurred after reception began and initial status is not '000'.
	...0 011.	ENQ received.
	...0 100.	EOT received.
	...0 101.	DLE followed by any valid second character.
	...0 110.	Wrong ACK received.
	...0 111.	NAK received.
	...1 001.	ETX received.
	...1 010.	ETB received.
	...1 101.	RVI received.
	...1 110.	Positive ACK0/ACK1 received.
	...1 111.	WACK received.
		Initial Status=100
	...0 000.	Time-out—nothing received.
	...0 010.	X.21 time-out during Clear.
	...0 011.	LPDA test control active, or X.21 time-out on Proceed-to-Select.
	...0 100.	DLE EOT disconnect sequence.
	...0 101.	Lost data.
	...1 101.	X.21 Call-Progress-Signal error.
	...1 110.	Disconnected, or X.21 DCE clear received during call request.
	...1 111.	Connected.
		Initial Status=110
	...0 000.	Adapter I/O error.
	...0 001.	Adapter interface check.
	...0 010.	Scanner interface error.
	...0 011.	Front end scanner failed to answer.
	...0 100.	Front end scanner internal error.
	...0 101.	LIC driver check, or clock internal error.

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
	...0 110.	LIC internal error.
	...0 111.	LIC or clock interface error.
	...1 000.	No interrupt from front end scanner.
	...1 001.	Command rejected.
	...1 010.	Trace already active.
	...1 011.	Scanner error reporting path check.
	...1 100.	Invalid level 2 interrupt.
	...1 101.	Modem already in test mode.
		Initial Status=111
	...0 001.	CTS dropped during command.
	...0 111.	DSR dropped during command.
	...1 001.	CTS failed to come up.
	...1 010.	DSR failed to come up.
	...1 011.	No cable installed.
	...1 100.	DSR and or CTS failed to drop (on Disable and Transmit Data commands).
	...1 110.	Autocall check.
		Leading Graphics Flag
	x	1=Non-control character was first character received (NCP BSC receive only). 0=No leading graphics received. or 1=Time-out during X.21 DTE Clear (X.21 lines only). 0=No time-out during X.21 DTE Clear (X.21 lines only).
22(16) PSAINLD		Input leads from modem.
	1...	Line—Data Set Ready (DSR) Dial—Power Indicator (PWI) X.21—Indication
	.1..	Line—Clear To Send Dial—Data Line Occupied (DLO) X.21—Receive lead (R)
	..1.	Line—Ring Indicator (R) Dial—Present Next Digit (PND)
	...1	Line—Receive Line Signal Detector (RLSD) Dial—Abandon Call and Retry(ACR)
	.... 1...	Line—Test Indicator (TI) Dial—Call Originator Status (COS)
	.... .1..	Line—Receive Data (RD) (Bits 6 and 7 not used)

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
23(17) PSAOUTLD		Outbound leads to modem.
	1...	Line—Data Terminal Ready (DTR) (0=LIC wrap) Dial—Digit Signal 8 X.21—No LIC wrap
	.1..	Line—Request To Send (RTS) Dial—Digit Signal 4 X.21—Control (C)
	..1.	Line—New Sync Dial—Digit Signal 2
	...1	Line—Data Rate Select (DRS) Dial—Digit Signal 1
	.... 1...	Line—Modem Test Dial—Call Request (CRQ)
	.... .1..	Dial—Digit Present (DPR)
		(Bits 6 and 7 not used)
28(1C) PSAACBF		ACB flag.
	1...	SIT or line trace flag (PSAACBP points to the LTCB).

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Code (Hex)	Command	Parameter Area: TCC (0)	Cmd Modifier (1)	Offset–1 (2)	Offset–2 (3)	Timer (3)	Count + Adr Buffer 1 (4)	Count + Adr Set Mode Data (4)	Count (Change) (4)	Start Change (5)	Data Byte 1 (6)	Data Byte 2 (7)	X.21 Retry Timer (8)	Transmit Line ID (8)	Transmit Adr 1 (8)	Single A/C Xmt Ctrl (9)	Transmit Control (9)	Rcv Line ID (A)	Data Count (Trace) (A)	Interface Adr (Trace) (B)	X.21 Retry Count (B)	Count + Adr Buffer 2 (C)	Count + Adr Insert Data (C)	Count + Adr Lead Graphic (C)	Buffer Prefix Size (C)	LPDA Command (C)	Buffer Size (D)	(Data Byte 9) (E)	(Data Byte 10) (F)	Status Area: SCF (10)	Command (Hex) (11)	Sec Status (12)	Line Comm Status (13)	Count + Last Buf Used (14)	Modem–In (16)	Modem–Out (17)	X.21 Initial LCS (18)	LPDA Sec Ctrl 2 (18)	Residual Timer (SIT) (18)	Rcv Adr 1 (18)	Single A/C Rcv Ctrl (19)	X.21 Residual Retry Cnt. (19)	LPDA Command 2 (19)	X.21 First CPS (1A)	LPDA Sec End Status 2 (1A)	LPDA Line Com Status 2 (1B)	X.21 Second CPS (1B)
01	Set Mode	X						X						X				F												X	01	00	X	0	X	X										
02	Enable																													X	02	00	X	0	X	X										
03	Disable																													X	03	00	X	0	X	X										
04	Monitor In Call																													X	04	00	X	0	X	X										
05	Dial	X	X	X			D																							X	05	00	X	0	X	X										
06	Change (See note)	X							X	X	1	2	3			4		5				7					8	9	10	X	06	00	X	0	X	X										
08	Raise DTR																													X	08	00	X	0	X	X										
09	Flush Data																													X	09	00	X													
0B	Reset–D																													X	0B	00	X	0	X	X										
0C	Reset–N																													X	0C	00	X	0	X	X										
10	Transmit Ctrl–SDLC	X	X	R			R								X	b														X	10	X	X	R						X	X					
11	Transmit Data–SDLC	X	X	T	R		T								X	b						R								X	11	X	X	R						X	X					
12	Rcv Monitor–SDLC	X	X												X															X	12	X	X	0						X	X					
13	Receive–SDLC	X	X	R			R								X															X	13	X	X	R						X	X					
14	Rcv Continue–SDLC	X	X	R			R																							X	14	X	X	R						X						
15	Call Request–X.21	X	X	D			D						X								X									X	15	00	X				X					X				X
16	Monitor In Call–X.21	X																												X	16	00	X				X					0				0
17	DTE Clear Req–X.21	X																												X	17	00	X													
18	Control–BSC	X	X				L										X													X	18	X	X													
19	Transmit–BSC	X	X	T			T										X						X							X	19	X	X	T												
1A	Transmit Continue–BSC	X	X	T			T										X													X	1A	X	X	T												
1B	Receive–BSC	X	X	R			R										X							X						X	1B	X	X	R												
1C	Rcv Continue–BSC	X	X	R			R																							X	1C	X	X	R												
1D	Transmit Continue–SDLC	X	X	T	R		T								X							R								X	1D	X	X	R							X					
2B	LPDA Test Request	X	X	R		X	R								X	b										X				X	2B	X	X	R				X					X	X		
2C	Trace (Start)		X	X		X	X							X					X	X				X		X				X	2C	00	X	X					X							
2D	Stop Trace																													X	2D	00	X													
2E	Wrap	X	X	T	R		T											X				R								X	2E	00	X	R												
F0	Halt																													X	H	X	X													
F1	Halt Immediate																																													
F5	Line Dump																													X	F5	X	X	X					X	X						

X = Valid field for that command
T = Transmit
R = Receive
D = Dial digit
F = Duplex
L = Leading graphics

Note: The numbers 1 through 10 represent the bytes of data to be changed. They are shown at the proper displacement, however, the descriptions do not always apply.

H = Halted command code

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PARAMETER/STATUS AREA CONTROL BLOCK
Character Mode

PSA
(NCP)
(Char)

Program: NCP

Size in bytes: 32(20)

Created by: NCP generation.

Pointer to PSA: LNVTPSAP field in LNVT (points to the transmit PSA for duplex lines); LNVTPSAR points to the receive PSA.

Function: Contains a parameter area used to transmit start stop control information from the CCU to the scanner and a status area used to transfer status infromation from the scanner to the CCU. For duplex operation, two PSAs are required; one for the transmit leg and one for the receive leg. See the PSA foldouts for a summary of the parameter and status fields used by each valid command.

Parameter Area

0(0) PSAPTCC Transmit correlation count.	1(1) PSAPCMOD* Command modifiers.	2(2) PSAPSCF* Secondary control field.	3(3) PSAPDF Parallel data field.
4(4) PSAPCPC* Primary control field.	5(5) PSASDF Serial data field.	6(6) PSAPLQTC Line quiet count.	7(7) Reserved
8(8)-15(F) Reserved			

*Indicates byte expansion follows.

Status Area

16(10) PSASSCF* Status control field.	17(11) PSASPDF Parallel data field. PSACMD* Command.	18(12) Reserved	19(13) PSALSTAT* (PSALCS) Line communition status.
20(14) PSASLCPC LCD and PCF.	21(15) PSASSDF Serial data field.	22(16) PSAINLD* Input leads from modem.	23(17) PSAOUTLD* Output leads to modem.
24(18) Reserved			
28(1C) PSAACBF* ACB flag.	PSAACBP Pointer to the ACB or the GCB (for user line control).		

*Indicates a byte expansion follows.

Byte Expansions

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
1(1) PSAPCMOD		Command modifiers.
	1.	Set SCF and PDF.
	.1.	Set SDF.
	. . 1. . . .	Set PCF.
	. . . . . 1. .	Perform line quiet test.
	. . . . . 1.	Set SCF.
2(2) PSAPSCF		Secondary control field. (Same as status control field- see 16(10) PSASSCF).
4(4) PSAPCPC		Primary control field. See Section 13 for start stop PCF state definitions.
16(10) PSASSCF		Status control field.
	1.	Stop bit check/receive break.
	.1.	Service request.
	. . 1. . . .	Overrun or underrun.
	. . . 1	Modem check.
	. . . . 1. . .	Receive line signal detect.
	. . . . . 1. .	Start bit detected.
	. . . . . 1.	Program flag.
	1	Pad flag.
17(11) PSACMD		Character mode command.
	X'40'	Write ICW. (See normal mode PSA byte expansion for commands common to normal mode).
19(13) PSALSTAT (PSALCS)		Line communication status.
		0 1 2 3 4 5 6 7 Reserved Final status Initial status
		Initial Status Field
	0000 0000	No status reported by CSP. (Ignore this status).
	110. . . .	Internal box error.
	111. . . .	Hardware error.

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
		Final Status Field
		Initial Status=110
	. . . 0 000 .	Adapter I/O error.
	. . . 0 001 .	Adapter interface check.
	. . . 0 010 .	Scanner interface error.
	. . . 0 011 .	Front end scanner failed to answer.
	. . . 0 100 .	Front end scanner internal error.
	. . . 0 101 .	LIC driver check, or clock internal error.
	. . . 0 110 .	LIC internal error.
	. . . 0 111 .	LIC or clock interface error.
	. . . 1 000 .	No interrupt from front end scanner.
	. . . 1 001 .	Command rejected.
	. . . 1 010 .	Trace already active.
	. . . 1 011 .	Scanner error reporting path check.
	. . . 1 100 .	Invalid level 2 interrupt.
	. . . 1 101 .	Modem already in test mode.
		Initial Status=111
	. . . 0 001 .	CTS dropped during command.
	. . . 0 010 .	DSR dropped during command.
	. . . 1 001 .	CTS failed to come up.
	. . . 1 010 .	DSR failed to come up.
	. . . 1 011 .	No cable installed.
	. . . 1 100 .	DSR and or CTS failed to drop (on Disable command).
	. . . 1 110 .	Autocall check.

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
22(16) PSAINLD		Input leads from modem.
	1.	Line—Data Set Ready (DSR) Dial—Power Indicator (PWI) X.21—Indication
	. 1.	Line—Clear to Send Dial—Data Line Occupied (DLO) X.21—Receive lead (R)
	. . 1. . . .	Line—Ring Indicator (RI) Dial—Present Next Digit (PND)
	. . . 1	Line—Receive Line Signal Detector (RLSD) Dial—Abandon Call and Retry (ACR)
	. . . . 1. . .	Line—Test Indicator (TI) Dial—Call Originator Status (COS)
	. . . . . 1. .	Line—Receive Data (RD) (Bits 6 and 7 not used)
23(17) PSAOUTLD		Outbound leads to modem.
	1.	Line—Data Terminal Ready (DTR) (0=LIC wrap) Dial—Digit Signal 8 X.21—No LIC wrap
	. 1.	Line—Request to Send (RTS) Dial—Digit Signal 4 X.21— Control (C)
	. . 1. . . .	Line—New Sync Dial—Digit Signal 2
	. . . 1	Line—Data Rate Select (DRS) Dial—Digit Signal 1
	. . . . 1. . .	Line—Modem Test Dial—Call Request (CRQ)
	. . . . . 1. .	Dial—Digit Present (DPR) (Bits 6 and 7 not used)
28(1C) PSAACBF		ACB flag
	1.	Line trace flag (PSAACBP points to the LTCB).

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Code (Hex)	Command	Parameter Area: TCC (0)	Cmd Modifier (1)	SCF (2)	PDF (3)	LCD/PCF (4)	Count + Adr Set Mode Data (4)	Count (Change) (4)	Start Change (5)	SDF (5)	Line Quiet Count (6)	Data Byte 1 (6)	Data Byte 2 (7)	(Data Byte 3) (8)	Transmit Line ID (8)	(Data Byte 4) (9)	Rcv Line ID (A)	(Data Byte 5) (A)	(Data Byte 6) (B)	(Data Byte 7) (C)	(Data Byte 8) (D)	(Data Byte 9) (E)	(Data Byte 10) (F)	Status Area: SCF (10)	PDF (11)	Command (Hex) (11)	Sec Status (12)	Line Comm Status (13)	LCD/PCF (14)	SDF (15)	Modem—In (16)	Modem—Out (17)
01	Set Mode	X					X								X		F							X		01	00	X	X	X	X	X
02	Enable																							X		02	00	X	X	X	X	X
03	Disable																							X		03	00	X	X	X	X	X
04	Monitor In Call																							X		04	00	X	X	X	X	X
06	Change	X						X	X			1	2	3		4		5	6	7	8	9	10	X		06	00	X	X	X	X	X
08	Raise DTR																							X		08	00	X	X	X	X	X
0B	Reset—D																							X		0B	00	X	00	00	X	X
0C	Reset—N																							X		0C	00	X	00	00	X	X
2E	Wrap	X	X														X							X		2E	00	X	X	X	X	X
40	Write ICW	X	X	X	X	X				X	X													X	X		00	X	X		X	X
F0	Halt																							X		H	00	X	X	X	X	X
F1	Halt Immediate																															
F5	Line Dump																							X	X		00	X				

X = Valid field for that command
F = Duplex

H = Halted command code

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PHYSICAL SERVICES BLOCK PSB

Program: NCP

Size in bytes: 92(5C)

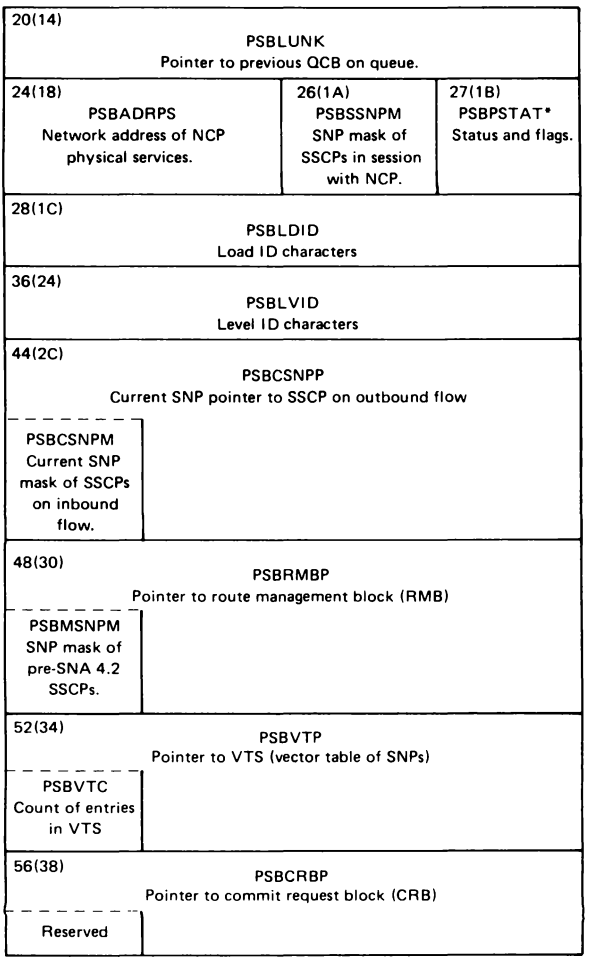
Created by: NCP generation. One for each NCP.

Pointer to PSB: RVTRP field in RVT and SYSPSBP field in HWE.

Function: Contains parameters necessary to the control of the dialog between the system services control point and the NCP physical services.

Physical Services Process Queue Control Block (Outbound)
(See QCB for input queues for all bit definitions.)

0(0)	PSB1ECB Pointer to first element queued.
PSBMCBD Major control block displacement divided by 2.	
4(4)	PSBLECB Pointer to last element queued.
8(8)	PSBLINK Pointer to next QCB on the queue.
PSBPRKEY QCB ID flag and task protect key.	
12(C)	PSBTSKEP Task entry point (CXDCPSO).
PSBSTAT Task and queue status.	
16(10)	PSBSAVE Address of save area pushdown list.
PSBSCHED Task dispatching priority.	



*Indicates a byte expansion follows.

60(3C) PSBPSNWA NCP physical services subarea network address.	62(3E) PSBTSNPM SNP mask for session trace	63(3F) Reserved
64(40) PSBMIS1 Plant ID and first byte of MOSS box serial number.	66(42) PSBMIS2 Second and third bytes of MOSS box serial number.	

Physical Services Pending System Queue
(See QCB for input queues for bit definitions.)

68(44)	
PSPMCBD Major control block displacement divided by 2.	PSP1ECB Pointer to first block queued
72(48)	PSPLECB Pointer to last block queued
76(4C) PSPPRKEY Priority key	PSPLINK Pointer to next QCB on the queue
80(50) PSPSTAT Task and queue status	PSPTSKEP Task entry point.
84(54)	PSPSAVE Address of save area pushdown list
PSPSCHED Task dispatching priority	85(55) PSPSTATP Prelease flags / 86(56) PSPPREL Prelease buffer count
88(58)	PSPLUNK Pointer to previous QCB on the queue

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
27(1B) PSBPSTAT		Physical services primary status.
	x...	1=NCP just loaded (IPLed). 0=NCP not just loaded (IPLed).
	.1..	PIU is RECMS to SSCP.
	..1.	CPM will supply DAF.

PHYSICAL UNIT VECTOR TABLE — PUV

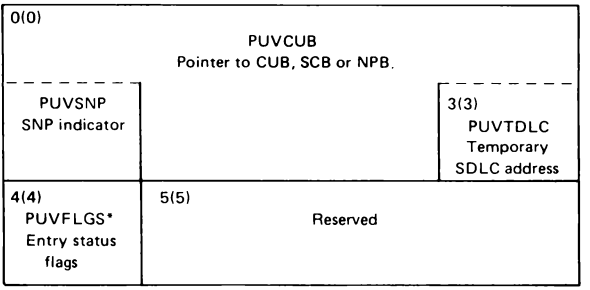
Program: NCP

Size in bytes: Variable (8 bytes per station).

Created by: NCP generation.

Pointer to PUV: LKBPUV field in LKB and VLBPUVT field in VLB.

Function: Used on all links to locate the common physical unit blocks (CUBs) associated with the link.



*Indicates a byte expansion follows.

Byte Expansion

Offset/Field Name	BH Pattern/ Hex value	Contents
4(4) PUVFLGS		Entry status flags
	1...	Last entry in PUV
	.1..	In use indicator 1=Entry in use. 0=Entry available.
	..1.	Dynamic reconfiguration (DR) processing indicator. 1=DR processing freeing LUB. 0=DR processing not freeing LUB.
	...1	DR add marker bit being verified.

QUEUE ANCHOR BLOCK QAB

Program: NCP

Size in bytes: 48(30)

Created by: NCP generation

Pointer to QAB: SYSPABP, SYSLAB1P, SYSLAB2P, and SYSDRXP fields in HWX contains pointers to PAB, LAB1, LAB2, and DRX, respectively.

Function: Contains pointers to pools.

0(0) thru 19(13) PU pool anchor block (PAB)
20(14) thru 31(1F) LU pool anchor block for PU type 1 (LAB1)
32(20) thru 43(2B) LU pool anchor block for PU type 2 (LAB2)
44(2C) thru 47(2F) Dynamic reconfiguration extension control block (DRX)

QUEUE CONTROL BLOCK FOR INPUT QUEUES — QCB (Input)

Program: NCP

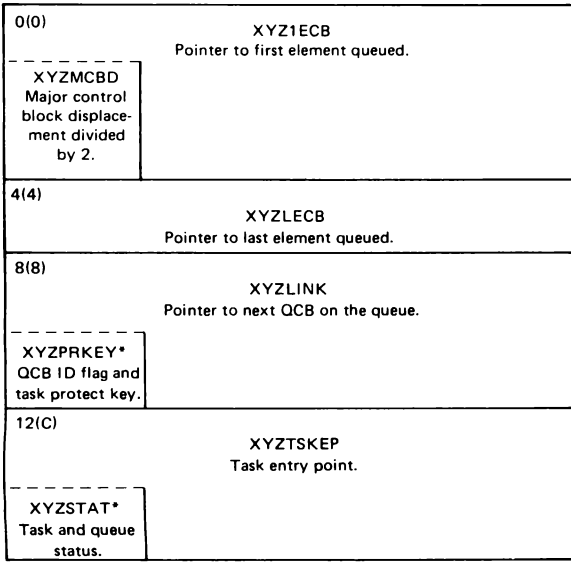
Size in bytes: 24(18) when no BHRs are defined; 28(1C) when BHRs are defined.

Created by: NCP generation.

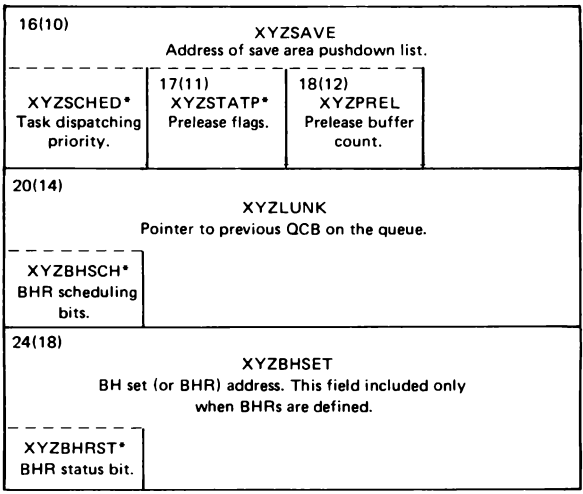
Pointer to QCB: See Note.

Function: Controls input queues.

Note: This is the general format for all input queues. The XYZ identifier at the beginning of each label is replaced with a different three-letter identifier for each particular input queue.



*Indicates a byte expansion follows.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
8(8) XYZPRKEY		QCB ID flag and task protect key.
	1010 1...	Indicates that this is a pseudo-input or input QCB.
	xxx	Protection key.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
12(C) XYZSTAT		Task and queue status.
	1...	Task in pending state (triggered).
	.1..	Task in wait state.
	..1.	Delayed task-pending bit (task is triggered while active).
	...1	Task is not in ready state.
	.... 1...	Task is reentrant.
	.... .1..	BHR extension definition: task can execute BHRs.
	1	Element has been dequeued (and not returned to the queue) during execution of active task.
16(10) XYZSCHED	Byte 0	Task dispatching priority.
	100.	Task priority is productive.
	010.	Task priority is immediate.
	001.	Task priority is appendage.
	000.	Task priority is nonproductive.
17(11) XYZSTATP	Byte 1	
	1000 0000	Preleased triggered.
	0100 0000	PRELEASE-SLOWDOWN
	0010 0000	PRELEASE=CWALL
20(14) XYZBHSCH		BHR scheduling bits.
	1...	BHR scheduled for Read command.
	.1..	BHR scheduled for Invite command.
	..1.	BHR scheduled for Write command.
	.... .1..	BHR scheduled after I/O.
24(18) XYZBHRST		BHR status bits.
	10..	Point 2 execution.
	01..	Point 1 execution.
	11..	Point 3 execution.
	..1.	First time BHR controller called.
	...1	BHR sequence aborted.
	.... 1...	BHR protect key.

Notes:

1. XYZSTAT must have the same displacement in the QCB as BCUCSTAT has in the BCU and UxCSTAT has in the PIU.
2. XYZPRKEY must have the same displacement in the QCB as BCUESTAT has in the BCU and UxESTAT has in the PIU.
3. XYZLINK must have the same displacement in the QCB as ECBWQCB has in the ECB, UxECHN has in the PIU, and BCUECHN has in the BCU.

QUEUE CONTROL BLOCK FOR WORK QUEUES

QCB (Work)

Program: NCP

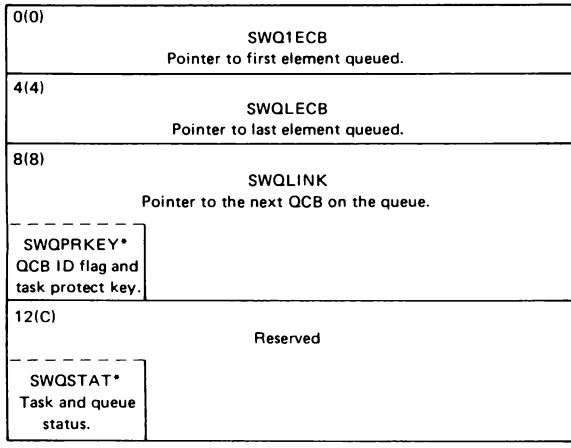
Size in bytes: 16(10)

Created by: NCP generation.

Pointer to QCB: Variable.

Function: Control work queues.

Note: This is the general format for all work queues. The SWQ identifier at the beginning of each label is replaced with a different three-letter identifier for each particular work queue.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
8(8) SWQPRKEY		QCB ID flag and task protect key.
	1010 0...	Indicates that this is a work QCB.
	xxx	Protect Key.
12(C) SWQSTAT		Task and queue status.
	1...	Task in pending state (triggered).
	..1.	Delayed task-pending bit (task is triggered while active.)
	...1	Task is not in ready state.
	.... 1...	Task is reentrant.
	.... .1..	BHR extension definition: task can execute BHRs.
	1	Element has been dequeued (and not returned to the queue) during execution of active task.

ROUTE ACTIVATION TABLE — RAT

Program: NCP

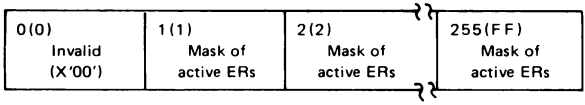
Size in bytes: 256(100)

Pointer to RAT: RMBRATP field in the route management block.

Created by: NCP generation.

Function: The route activation table (RAT) contains one-byte elements that correspond to the network subarea addresses. Each one-byte element is a mask of the active explicit routes to the NCP. An NC.ER.ACT request to the NCP turns on a particular bit position in one of the masks.

The first element in the RAT is always 0 because subarea 00 is an invalid network subarea address. Each RAT element corresponding to a defined network subarea contains a nonzero mask value when the explicit routes represented by the bit positions within the mask have been activated. If a subarea is undefined, its RAT entry is zero.



RESOURCE CONNECTION BLOCK RCB

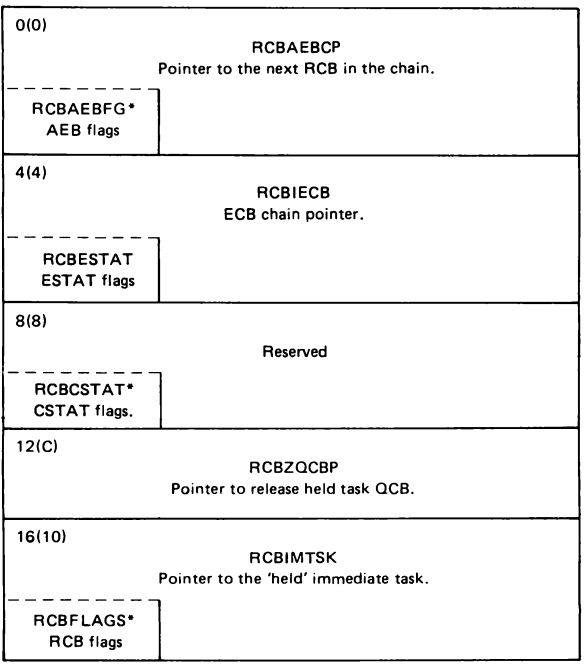
Program: NCP

Size in bytes: 24(18)

Created by: NCP generation, number is user supplied.

Pointer to RCB: The resource connection block is an offset field in the CUB, LUB, DVB, SNP, NLB, NLX, NPB, and GPT. When one of these blocks is associated with the VRB, its RCB is chained to the VRB (see VRB fields—VRBCHPF and VRBCHPL).

Function: Contains routing and flow control information.



*Indicates a byte expansion follows.

20(14) RCBBLK* Block type	21(15) RCBBLO Block offset	22(16) RCBVVT VVT Index

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) RCBAEBFG		AEB flags
	1...	RCB in chain.
8(8) RCBCSTAT		CSTAT flags.
	1...	ECB is on a chain.
16(10) RCBFLAGS		RCB flags.
	1...	Branch to immediate routine.
	.1..	I-pacing in use.
20(14) RCBBLK		Block type
	X'01'	CUB
	X'02'	LUB
	X'03'	DVB
	X'04'	SNP
	X'05'	NLB
	X'06'	NLX
	X'07'	NPB
	X'08'	GPT

ROUTE CONTROL QUEUE RCQ

Program: NCP

Size in bytes: 24(18)

Created by: NCP generation.

Pointed to by: CXQRCQ in the link-edit map.

Function: Communication with the ER manager (CXDBERM) occurs through the route control queue. NC.ER.OP-, NC.ER.INOP-, NC.ER.ACT-, NC.ER.TEST-, NC.ER.ACT.REPLY-, NC.ER.TEST.REPLY-, LSA PIUs, and TG QCB are enqueued to this queue.

Format: Standard input QCB.
Task – CXDBERM
Priority – Appendage
Reentrant – No

ROUTE MANAGEMENT BLOCK RMB

Program: NCP

Size in bytes: 17(11)

Created by: NCP generation.

Pointer to RMB: PSB + 48(30).

Function: The RMB contains control information used by explicit-route manager routines.

<table>
<tr><td colspan="3">0(0)
RMBRSTP
Pointer to routing status table (RST).</td></tr>
<tr><td colspan="3">4(4)
RMBRATP
Pointer to route activation table (RAT).</td></tr>
<tr><td>8(8)
RMBMAXSF
Maximum length of the variable length portion of an NC.ER.OP or NC.ER.INOP RU.</td><td>10(A)
RMBMAXSA
Maximum subarea address in the network.</td><td>11(B)
RMBTRTCT
Number of rows in the transit routing table (TRT).</td></tr>
<tr><td colspan="3">12(C)
RMBPROTP
Pointer to prototype PIU.</td></tr>
<tr><td>16(10)
RMBTSTAT*
Task status.</td><td colspan="2"></td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
16(10) RMBTSTAT	.x..	1=Explicit route manager task suspended. 0=Initial entry to explicit route manager task.

ROUTE STATUS TABLE — RST

Program: NCP

Size in bytes: 256(100)

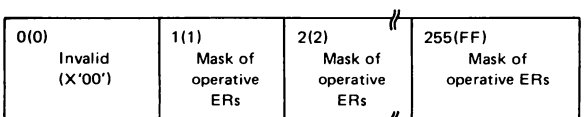
Pointer to RST: RMBRSTP field in the route management block.

Created by: NCP generation.

Function: The route status table (RST) contains one-byte elements that correspond to the network subarea addresses. Each one-byte element is a mask of an operative explicit route. These masks represent the state of connectivity in the network as perceived by the NCP.

The first element in the RST is always zero since subarea 00 is an invalid network subarea address. Each RST element corresponding to a defined network subarea contains a nonzero mask value when the explicit routes represented by the bit positions within the mask are operative.

The RST entry for the NCP's own subarea always has all bits in the mask on. This indicates to the NCP that all explicit routes to its physical units and boundary are always operative. If a subarea is undefined, its RST entry is zero.



RESOURCE VECTOR TABLE RVT

Program: NCP

Size in bytes: Variable depending upon the number of eight-byte entries.

Created by: NCP generation.

Pointer to RVT: SYSRVTAD field in word directed addressable storage (XDA), location X'07E8'. (Points to the 2-byte field that contains the highest BSC/SS address in the table (first entry-2).)

The MVT entry representing the subarea points to the 2-byte field that contains the highest network address in the table (first entry-4).

Function: Serves as the master directory to level 5 resource control blocks. Each eight-byte entry contains a type field plus the address of the resource control block for that resource.

Immediately preceding the first entry are 2 halfwords that contain the highest network address in the table and the highest BSC/SS ID (if any) in the table.

<table>
<tr><td colspan="2">-4(-4)
Highest element network address in the table.</td><td colspan="2">-2(-2)
Highest BSC/SS element network address (if any).</td></tr>
<tr><td>0(0)
RVTTYPE1*
Resource type.</td><td>1(1)
RVTTYPE2*
Resource type indicator.</td><td>2(2)
RVTTRACT*
Generalized PIU trace status byte.</td><td>3(3)
Reserved</td></tr>
<tr><td colspan="4">4(4)
RVTRP
Address of resource control block. The resource control block can be a line control block, device control block, link control block, station control block, common physical unit block, logical unit control block, physical services control block (always 1st entry in RVT), programmed resource logic unit block, programmed resource physical unit block, or programmed resource virtual line block.</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name and Bit Pattern		Contents/Description
0(0) RVTTYPE1	1(1) RVTTYPE2	
	1...	MVT entry (see MVT DSECT)
	0...	RVT entry
	00..	Local resource
	01..	Remote resource
	0.0.	BSC/SS resource
1000 0...	0.0.	BSC/SS line
010.	0.0.	BSC/SS device
001.	0.0.	BSC/SS line group
...1	0.0.	BSC/SS input
.... 1...	0.0.	BSC/SS output
.... .10.	0.0.	BSC/SS switched
.... .11.	0.0.	BSC/SS switched call-out
....1	0.0.	BSC/SS device dependent flag
....	0.1.	SDLC resource
0000 0000	0.1.	NCP physical services resource
1...	0.1.	SDLC link
01..	0.1.	SDLC station format
0100	0.1.	SDLC PU type 4 station
0110	0.1.	SDLC PU type 2 station (cluster)
0111	0.1.	SDLC PU type 1 station (terminal)
00.. 1...	0.1.	SDLC logical unit
.... .1..	0.1.	SDLC switched
....	010.	Invalid
1111 1111	0...	End of RVT
....	0011	Programmed resource
1...	0.11	Programmed resource virtual line
0110	0.11	Programmed resource virtual physical unit
00.. 1...	0.11	Programmed resource virtual logical unit
0000 1000	0011 1...	Network addressable unit
2(2) RVTTRACT		Generalized PIU trace status.
	1...	GPT active on this resource.
	.1..	GPT activated—status pending.
	..1.	GPT deactivated—status pending.
	...1	Missing trace data—status pending.
	.... 1...	VR INOP status pending.
	.... .1..	DR resource started/stopped trace—status pending.
	xx	Reserved.

STATION CONTROL BLOCK

SCB (Main)

Program: NCP

Size in bytes: 116(74)

Created by: NCP generation PU macro.

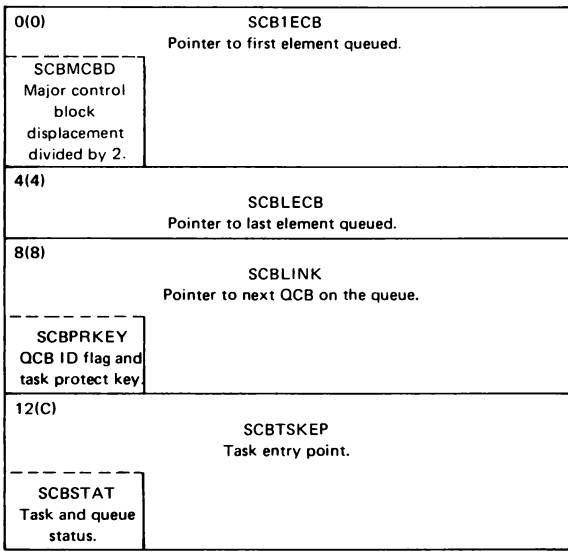
Pointer to SCB: MVTENT field in the MVT, PUVCUB field in PUV, and RVTRP field in RVT.

Function: Contains the QCB, status, and scheduling information for station control. If the station is a cluster, the SCB is incorporated into the CUB (see CUB).

Index

Name	Offset	Name	Offset	Name	Offset
SCBADRC	40(28)	SCBMCBD	0(0)	SCBSNPM	28(1C)
SCBAPIU	52(34)	SCBMPIU	114(72)	SCBSRTLR	64(40)
SCBCBBP	96(60)	SCBNR	56(38)	SCBSRTR	90(5A)
SCBCFGX	100(64)	SCBNS	57(39)	SCBSRTT	88(58)
SCBCOC	63(3F)	SCBOCF	49(31)	SCBSSCF	46(2E)
SCBCSCF	112(70)	SCBOCL	62(3E)	SCBSSCP	47(2F)
SCBEERS	24(18)	SCBOCLS	71(47)	SCBSTAT	12(C)
SCBERPCS	70(46)	SCBOFSET	94(5E)	SCBSTATP	17(11)
SCBERPT	69(45)	SCBPCNT	52(34)	SCBSTATS	48(30)
SCBERS	58(3A)	SCBPNS	32(20)	SCBSTMOD	92(5C)
SCBFLPF	108(6C)	SCBPREL	18(12)	SCBTCNT	50(32)
SCBFLST	113(71)	SCBPRKEY	8(8)	SCBTERR	68(44)
SCBIMRC	78(4E)	SCBRCMD	65(41)	SCBTGBP	104(68)
SCBISNPM	93(5D)	SCBRCNT	80(50)	SCBTIACT	84(54)
SCBLECB	4(4)	SCBRECNT	74(4A)	SCBTINCT	86(56)
SCBLINK	8(8)	SCBRPCNT	82(52)	SCBTPCNT	76(4C)
SCBLKB	40(28)	SCBRSE	44(2C)	SCBTRTCT	72(48)
SCBLOBH	24(18)	SCBRTCNT	60(3C)	SCBTSKEP	12(C)
SCBLOBT	28(1C)	SCBSAVE	16(10)	SCBTYPE	36(24)
SCBLOSH	32(20)	SCBSCHED	16(10)	SCB1ECB	0(0)
SCBLOST	36(24)	SCBSLC	61(3D)	SCB2ERPT	66(42)
SCBLUNK	20(14)				

Link Inbound Queue (LIBQ) Control Block
(See QCB for input queues for all bit definitions).



16(10)		
SCBSAVE Address of save area pushdown list.		
SCBSCHED Task dispatching priority.	17(11) SCBSTATP Type of release.	18(12) SCBPREL PRELEASE buffer count.
20(14) **SCBLUNK** Pointer to previous QCB on queue.		

Link Outbound Queue (LOBQ) Control Block

24(18)	
SCBLOBH Link outbound queue head pointer.	
SCBEERS Extended retry status.*	
28(1C) SCBLOBT Link outbound queue tail pointer.	
SCBSNPM SNP mask of SSCP that issued contact.	

*Refer to the LXBEXTST field of the link XIO control block for a definition of the status bits.

Link Outstanding Queue (LOSQ) Control Block

32(20)	
SCBLOSH Link outstanding queue head pointer.	
SCBPNS NS at time of poll.	
36(24) SCBLOST Link outstanding queue tail pointer.	
SCBTYPE* Station type.	

*Indicates a byte expansion follows.

<table>
<tr><td colspan="3">40(28)
SCBLKB
Address of link control block.</td></tr>
<tr><td>SCBADRC
SDLC addressing character.</td><td colspan="2"></td></tr>
<tr><td colspan="2">44(2C)
SCBRSE
Network address of resource.</td><td>46(2E)
SCBSSCF*
Service-seeking commands.</td><td>47(2F)
SCBSSCP
Contact Poll commands.</td></tr>
<tr><td>48(30)
SCBSTATS*
Station status.</td><td>49(31)
SCBOCF*
Service-seeking output control flags.</td><td colspan="2">50(32)
SCBTCNT
Transmission counter. (I-format)</td></tr>
<tr><td colspan="3">52(34)
SCBAPIU
Address of physical service PIU.</td></tr>
<tr><td>SCBPCNT
Pass limit.</td><td colspan="2"></td></tr>
<tr><td>56(38)
SCBNR
Receive count.</td><td>57(39)
SCBNS
Send count.</td><td colspan="2">58(3A)
SCBERS
First error encountered.**</td></tr>
<tr><td colspan="2">60(3C)
SCBRTCNT
First level ERP retry count.</td><td colspan="2">62(3E)
SCBOCL
Outstanding count limit.</td></tr>
<tr><td colspan="2">61(3D)
SCBSLC
Second level ERP retry count.</td><td colspan="2">63(3F)
SCBCOC
Current outstanding count.</td></tr>
<tr><td>64(40)
SCBSRTLR
Second level retry limit.</td><td>65(41)
SCBRCMD*
Run command modifiers.</td><td colspan="2">66(42)
SCB2ERPT
Hardware second level ERP time-out value.</td></tr>
</table>

*Indicates a byte expansion follows.

**Refer to the LXBSTAT and LXBSTATC fields of the Link XIO Control Block for a definition of the status bits.

68(44) SCBTERR Monitor station errors count. (Limit 64)**	69(45) SCBERPT Second level ERP pause.	70(46) SCBERPCS ERP control flags send.	71(47) SCBOCLS Outstanding count limit save area.
72(48) SCBTRTCT Total retry counter.		74(4A) SCBRECNT Receive I-format error counter.	
76(4C) SCBTPCNT Total transmission counter.		78(4E) SCBIMRC Intensive mode record counter.	
80(50) SCBRCNT I-format received counter.		82(52) SCBRPCNT S-format received counter.	
84(54) SCBTIACT Total acknowledged I-format counter.		86(56) SCBTINCT Total I-format retransmission counter.	
88(58) SCBSRTT Total transmission threshold value.		90(5A) SCBSRTR Total retries threshold value.	
92(5C) SCBSTMOD* Flag byte	93(5D) SCBISNPM Intensive mode SNP mask.	94(5E) SCBOFSET Offset from BH to TH.	
96(60) SCBCBBP Pointer to committed buffers block.			
100(64) SCBCFGX Pointer to SCB extension. (SXB)			
104(68) SCBTGBP Transmission group pointer.			
108(6C) SCBFLPF Multilink transmission group chain pointer.			
112(70) SCBCSCF* Configurable station control flags.	113(71) SCBFLST* Status of multilink TG or X.25 flag.	114(72) SCBMPIU Maximum PIU size.	

*Indicates a byte expansion follows.

**I-format (receive FCS error, format check, and/or abort.)

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
36(24) SCBTYPE		Station type.
	x...	Data mode. 1=Duplex station. 0=Half-duplex station.
	.1..	Continue polling in ANS.
	..1.	Switched SDLC station.
	...1	Resource eligible for NPA data collection
	x...	Secondary link bit. 0=Link is primary. 1=Link is secondary.
	.... .1..	Terminal node (type 1 PU).
	.... ..1.	Cluster controller (type 2 PU).
	x	1=Intermediate node (INN). 0=Boundary node (BNN).
46(2E) SCBSSCF	Byte 0	Service seeking command flags.
	1...	Poll skip flag.
	.1..	Halt service seeking.
	..1.	Not operational.
	.... 1...	Link test, level 2 (LL2) active.
	1	Contact poll command active.
	Byte 1	Contact poll commands.
	1...	Disconnect (DISC).
	.1..	Set Normal Response mode. (SNRM)
	..11 111.	Poll command mask.
	.... 1...	XID with data.
	.... .1..	Set Initialization Mode. (SIM)
	.... ..1.	Exchange Identification, (XID)
	.... .11.	DISC modifier.
	1	Contact poll command field.

Configurable States (see individual bit definitions, preceeding)

Byte 0	Byte 1	Meaning
1010 0000	0000 0001	Reset.
1010 0001	0000 1001	XID pending with data.

Primary States (see individual bit definitions, preceeding)

Byte 0	Byte 1	Meaning
1010 0000	0000 0001	Reset.
1010 0001	0100 0001	Contact pending.
1110 0001	1100 0001	Contact and Discontact pending.
0000 0000	0000 0001	Active.
0010 0000	0000 0001	Load/Dump/RPO active.
1010 0001	0000 0101	SIM pending.
1010 0001	1000 0001	DISC pending (SCBAPIU=0).
1010 0001	1000 0001	Discontact pending (SCBAPIU≠0).
1010 1000	0000 0001	Link test, level 2 (LL2) active.
1110 1000	0000 0001	Link test, level 2 (LL2) ending.

Secondary States (see individual bit definitions, preceeding)

Byte 0	Byte 1	Meaning
1010 0001	0100 0001	Contact pending or Contact pending with SNRM.
0000 0000	0000 0001	Active.
1010 0001	1000 0001	RD (formerly RQD) pending (SCBAPIU=0).
1010 0001	1000 0111	Discontact pending (SCBAPIU≠0).

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
48(30) SCBSTATS		Station status.
	1...	RR Poll sent (NPA use only).
	.1..	Link test, level 2 (LL2) active.
	..1.	Station quiesce pending.
	...1	Remote power-off in progress.
	.... 1...	SIM can be accepted over the link associated with this station.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	.... .1..	COMMIT in progress for this station.
	.... ..1.	One or more SDLC error record counters has reached its limit.
	1	Device available to dynamic reconfiguration.
49(31) SCBOCF		Service-seeking output control flags.
	1...	Output skip bit.
	.1..	Run terminator interlock.
	..1.	RNR received.
	...1	Second level ERP pause in progress.
	.... .1..	Duplex SDLC scheduling.
	.... ..1.	RNR repoll.
	1	Half-duplex poll in progress.
65(41) SCBRCMD		Run command modifiers.
	.1..	Override 1st and 2nd level retries.
	...1	Immediate retry.
	.... ..1.	Waiting for a good response to poll.
92(5C) SCBSTMOD		Flag byte. Set/reset at levels 2, 3, or 5. Level 5 may alter these flags only with a XIO Setmode.
	1...	Intensive Mode (IM) active.
	.1..	IM stop in progress for SCV (IM).
	..1.	IM stop in progress for slowdown.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
112(70)		
SCBCSCF		Configurable station control flags.
	1...	Any load/dump/RPO state.
	.1..	Any active normal-response-mode state.
	..1.	Any discontact state.
	...1	Any contact state.
	.... 1...	Any test state.
		Substate indicators
	.... .xx.	00 — Configurable 01 — Primary 10 — Secondary
	1	Final phase for any contact or load/dump state.
		Configurable substate definitions
	X'00'	Reset state.
	X'08'	Link test, level 2.
	X'10'	Contact XID '00' state.
	X'20'	Discontact configurable state.
	X'30'	Contact/Discontact XID '00' state.
	X'80'	Load/dump RPO pending.
	X'A0'	Discontact, load/dump/RPO configurable state.
	X'B0'	Contact/Discontact, load/dump/RPO XID '00' state.
	X'C0'	Load/dump active.
	X'C1'	Load/dump final pending.
		Primary substate definitions
	X'13'	Contact SNRM state.
	X'22'	Discontact primary state.
	X'33'	Contact/Discontact SNRM state.
	X'42'	Active primary.
	X'62'	Active Discontact pending primary.
	X'A2'	Discontact, load/dump/RPO primary state.
	X'B3'	Contact/Discontact, load/dump/RPO SNRM state.
	X'E2'	Active Discontact load/dump/RPO pending primary.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
		Secondary substate definitions
	X'14'	Contact XID '07' state.
	X'15'	Contact UA state.
	X'24'	Discontact secondary state.
	X'34'	Contact/Discontact XID '07' state.
	X'35'	Contact/Discontact UA state.
	X'44'	Active secondary.
	X'64'	Active Discontact Pending secondary.
	X'A4'	Discontact, load/dump/RPO secondary state.
	X'B4'	Contact/Discontact, load/dump/ RPO XID '07' state.
	X'B5'	Contact/Discontact, load/dump/ RPO UA state.
	X'E4'	Active Discontact load/dump/RPO pending secondary.
113(71) SCBFLST		Status of multilink TG or X.25 flag.
	1.	Station ready to send to multilink TG.
	. . . . 1. . .	X.25 single link SNA 4.

SWITCHED LINE GROUP ENTRY SGE

Program: NCP

Size in bytes: 4(4) or 8(8)

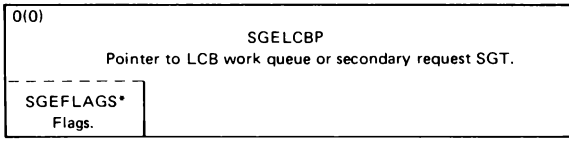
Located in: Switched line group table (SGT), one SGE for each line in the group.

Created by: NCP generation.

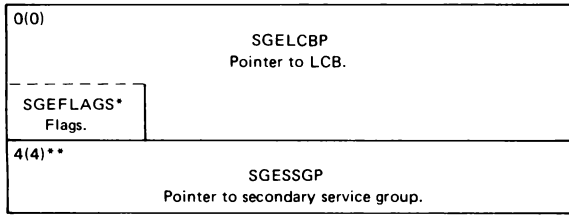
Pointer to SGE: None. (See SGT.)

Function: Points to a line control block (LCB) or another SGT for chaining. The following format is for:

- First entry if there is no secondary request group. (See SGT for secondary request group.)
- Each entry after first.
- Last entry if there is no secondary service group.



The following format is for last entry if there is a secondary service group.



*Indicates a byte expansion follows.
**Actual position depends upon number of entries in table.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) SGEFLAGS		Flags
	1...	Queue is present (always 1).
	..1.	Not line entry.
	...1	Secondary request entry.
	.... 1...	Last line entry.
	.1..	Secondary service group entry is next.

SWITCHED LINE GROUP TABLE SGT

Program: NCP

Size: QCB, counter, and first entry for secondary request group = 28(1C) bytes.

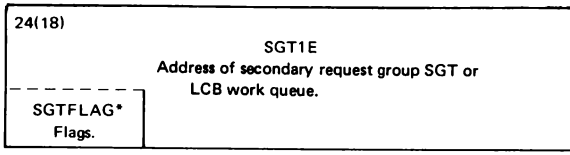
Created by: NCP generation.

Pointer to SGT: COESGTP field in COE; LCBESGTP field in LCB.

Function: The SGT is a group of similar type switched lines that can be used to call a terminal that uses that group.

Switched Group QCB (SGTORQ)
(See QCB for work queues for all bit definitions.)

<table>
<tr><td colspan="4">0(0)
SGT1ECB
Pointer to first element queued.</td></tr>
<tr><td colspan="4">4(4)
SGTLECB
Pointer to last element queued.</td></tr>
<tr><td colspan="4">8(8)
SGTLINK
Pointer to next QCB in queue.
SGTPRKEY
Protection key.</td></tr>
<tr><td colspan="4">12(C)
Reserved
SGTSTAT
Task and queue status.</td></tr>
<tr><td>16(10)
SGTWLL
Work load limit.</td><td>17(11)
SGTWLC
Work load current size.</td><td>18(12)
SGTQL
Queue limit.</td><td>19(13)
SGTCIL
Call in limit.</td></tr>
<tr><td>20(14)
SGTCIC
Call in counter.</td><td colspan="3">21(15)
Pad</td></tr>
</table>



*Indicates a byte expansion follows.

Note: The fullword entry at X'18', consisting of a flag byte and a pointer, is repeated if there is more than one line or secondary request group in this SGT.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) SGTFLAG		Flags.
	1...	Queue is present (always 1).
	..1.	Not line entry.
	...1	Secondary request group.
	.... 1...	Last line entry.
	.... .1..	Secondary service group entry is next.

SEND ID SID

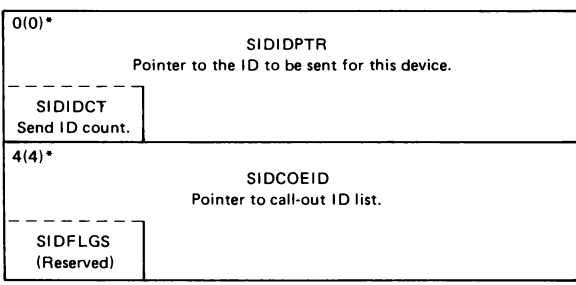
Program: NCP

Size in bytes: 4(4) (no call-out ID list)
8(8) (call-out ID list present)

Created by: NCP generation.

Pointer to SID: None; SID follows COE if send ID is required.

Function: Contains information required for sending hardware identification. Extension is included only for BSC switched terminals that require the 3725 to send its ID.



*Note: Actual position depends on other extensions present. This extension is present only if the call-out extension (COE) is present, and always follows that extension.

SUBAREA INDEX TABLE SIT

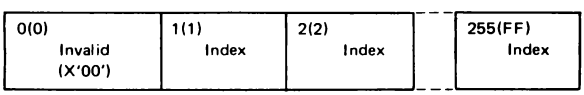
Program: NCP

Size in bytes: 256(100)

Created by: NCP generation.

Pointed to by: CXTSIT in the link-edit map or SYSSITP field in HWE + 72(48).

Function: The subarea index table (SIT) consists of one-byte elements that correspond to the network subarea addresses. Each one-byte element is an index value to the transit routing table (TRT). The SIT is always 256 bytes long. The first element in the SIT is always zero to indicate that subarea 00 is an invalid network subarea address. For each subarea defined in the network, there is a nonzero index value in the corresponding SIT element. If a subarea is undefined, its SIT entry is zero. The element in the SIT corresponding to the NCP's subarea address is always generated as a zero.



Program: NCP

Size in bytes: 16(10)

Created by: Dynamically created when a buffer is leased for set-mode processing.

Pointer to SMB: PSASMST field in the PSA.

Function: Contains the set-mode data area passed to the communications scanner processor when the Set Mode command is processed.

0(0) SMBDSBL Disable time-out		2(2) SMBLIN2* Line parameters.	3(3) SMBLIN3* Line parameters.
4(4) SMBLCD* LCD and buffer prefix.	5(5) SMBLIN5* Line parameters.	6(6) SMBBUFF NCP buffer size.	7(7) SMBAC Length of address and control fields.
8(8) SMBSEC SDLC secondary station address.		10(A) SMBRPLY Reply time-out.	
12(C) SMBENBL Enable/Connect-Out time-out.		14(E) SMBTXT Recieve text time-out.	

*Indicates a byte expansion follows.

Byte Expansions

Offset/ Field Name	Bit Pattern/ Hex Value	Comments	Applies to: SDLC	X.21	BSC
2(2) SMBLIN2		Line parameters.			
	1.	Duplex	X	X	
	.1	230 KB line.	X		
	. .0	Always 0 for NCP.			
	. . .1	Transmit two flags.	X		
	. . . . x. . .	1=Transmit X'07' pad on turnaround. 0=Transmit X'FF' pad on turnaround.	X		
	. . . . . .1 .	Transmit flags between frames.	X		
	x	1=Primary station. 0=Secondary station.	X		X

Byte Expansions

Offset/ Field Name	Bit Pattern/ Hex Value	Contents	Applies to: SDLC	X.21	BSC
3(3) SMBLIN3		Line parameters.			
	1.	Generate answer tone.	X		X
	.1	Switched line.	X	X	X
	. .1	Ring indicator mode	X		X
	. . .1	Transmit in NRZI mode	X		
	. . . . 1. . .	Turn with RTS on (4-wire facility using HDX protocol).	X		X
	. . . . .1 . .	Transmit with new sync.	X		X
	. . . . . .1 .	Zero insert/delete suppresion.	X		
	1	X.21 mode.		X	
4(4) SMBLCD		LCD and buffer prefix.			
	xxxx	Line control definer field.			
		X'3'=Autocall	X		X
		X'9'=SDLC	X	X	
		X'C'=BSC (EBCDIC)			X
		X'D'=BSC (USASCII)			X
	 xxxx	NCP buffer prefix size X'0'=Minimum size. X'8'=Normal size. X'F'=Maximum size.			
5(5) SMBLIN5		Line parameters			
	1.	Synchronous line	X	X	X
	.xxx x. . .	Line speed if 3725 clocking is used. Synchronous line 0001=50 bps 0010=110 0100=134.5 0111=200 1000=300 1011=600 1101=1200 1110=Special	X	X	X
	. . . . .x . .	1=Modem clocking. 0=3725 clocking.	X	X	X
	. . . . . .x .	1=High data rate for modem. 0=Low data rate.	X		X
	1	Medium-speed local attachment.	X		X

SDLC MONITOR MODE CONTROL BLOCK — SMM

Program: NCP

Size in bytes: 148(94)

Created by: NCP generation.

Pointer to SMM: CXTSMM in link-edit map.

Function: Contains the status bytes and QCBs for SDLC monitor mode.

<table>
<tr><td colspan="3">0(0)-23(17)
SMMIQCB**
SDLC monitor mode input QCB.
(See input QCB for field definition.)</td></tr>
<tr><td>24(18)
SMMFSTAT*
SMM status byte.</td><td>25(19)
SMMMLTC
MLT entry count.</td><td>26(1A)
SMMSEQN
Session sequence number.</td></tr>
<tr><td colspan="3">28(1C)-39(27)
SMMQECB
SMM ECB for QCB timer.
(See ECB for field definitions.)</td></tr>
<tr><td colspan="3">40(28)—51(33)
SMMNECB
SMM ECB for NLB timer.
(See ECB for field definitions.)</td></tr>
<tr><td colspan="3">52(34)—67(43)
SMMWKC
SMM work queue.
(See work QCB for field definitions.)</td></tr>
<tr><td colspan="3">68(44)-147(93)
NLB for SDLC monitor mode RU processor***.</td></tr>
</table>

*Indicates a byte expansion follows.
**Priority is immediate. Task is CXDJMMI.
***Priority is productive. Task is CXDJRUP.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) SMMFSTAT		SDLC monitor mode status.
	1...	SMM active.
	.1..	Deactive pending.
	..1.	SMM QCB timer in progress.
	...1	SMM NLB timer in progress.
	.... 1...	Activate physical pending.
	.... .1..	Activate physical complete.
	.... ..1.	Start Data Traffic pending.
	1	Start Data Traffic complete.

SSCP–NCP SESSION CONTROL BLOCK — SNP

Program: NCP

Size in bytes (each entry): 24(18)

Created by: NCP generation. One entry for each allowable concurrent SSCP-NCP session.

Pointer to: VTSSNPP field in VTS.

Function: Contains session-related information to control SSCP-NCP sessions.

<table>
<tr><td colspan="2">0(0)
SNPADRPC
Network address of SSCP.</td><td>2(2)
SNPPSTAT*
Physical services primary status.</td><td>3(3)
SNPSSTAT*
Physical services secondary status.</td></tr>
<tr><td>4(4)
SNPSNPM
SNP mask.</td><td>5(5)
SNPRCBO
offset to attached RCB.</td><td>6(6)
SNPANSC*
ANS reason code.</td><td>7(7)
SNPSONC*
SON reason code.</td></tr>
<tr><td colspan="2">8(8)
SNPSEQI
Last inbound sequence number.</td><td colspan="2">10(A)
SNPSEQO
Outbound sequence number.</td></tr>
<tr><td>12(C)
SNPSTFLG*
Session trace flags.</td><td colspan="3">SNPVTSP
Pointer to VTS.</td></tr>
<tr><td colspan="4">16(10)-23(17)
SNPTOD
Saved ACTPU time of day.</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
2(2) SNPPSTAT		Physical services primary status.
	1...	Session established.
	.1..	Data flow enabled.
	..1.	Data flow active.
	...1	Pre SNA 4.2 NCP-SSCP session.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
3(3) SNPSSTAT		Physical services secondary status.
	.x..	1=Recovery mode. 0=Normal mode.
	..1.	Local link station ID supported.
	.... 1...	LSA not supported.
6(6) SNPANSC		ANS reason code.
	x...	ANS reason code is 1=Residual. An ACTPU has occurred since ANS completed. 0=Current.
	X'01'/X'81'	Panel channel discontact.
	X'02'/X'82'	Attention or activity time-out.
	X'03'/X'83'	Unexpected ACTPU.
	X'07'/X'87'	DACTPU.
	X'08'/X'88'	Lost subarea (link) or VR INOP.
	X'09'/X'89'	Channel discontact received.
7(7) SNPSONC		SON reason code.
	x...	SON reason code is 1=Residual. An ACTPU has occurred since ANS completed. 0=Current.
	X'01'/X'81'	Panel channel discontact.
	X'02'/X'82'	Attention or activity time-out.
	X'03'/X'83'	Unexpected ACTPU.
	X'07'/X'87'	DACTPU.
	X'08'/X'88'	Lost subarea (link) or VR INOP.
	X'09'/X'89'	Channel discontact received.
12(C) SNPSTFLG		Session trace flags.
	1...	Session trace for all resources.
	.1..	Session trace for a specific resource.

SERVICE ORDER TABLE FOR BSC/SS LINES

Program: NCP

Size in bytes: 4 bytes in header; 4 bytes in each entry; 4 bytes in trailer.

Created by: NCP generation.

Pointer to SOT: LCBESOTP field in LCB.

Function: Defines the order in which devices on a BSC/SS line are interrogated to see if that device requires service. Generated for multipoint lines.

Header

0(0)	1(1)	2(2)
SOTEMAX Maximum number of entries.	SOTUSE Number of entries in use.	Reserved

Entry Format

4(4)
SOTRESP Pointer to the DVBSTAT field in the device control block (DVB) for this device. More than one entry can point to the same DVB.

Trailer

*	*
Negative offset to first entry of SOT.	Set to 0.

*Offset depends on the number of entries in the SOT.

SERVICE ORDER TABLE FOR SDLC

SOT (SDLC)

Program: NCP

Size in bytes: 4 bytes in header, 4 bytes in each entry, 4 bytes in trailer.

Created by: NCP generation.

Pointer to SOT: CCBPOLL field in ACB.

Function: Defines the order in which stations on an SDLC link are interrogated to see if that station requires service.

Header

0(0) Zero.	2(2) SOTMAXE Maximum number of entries.	3(3) SOTINUSE Number of entries in use.

Entry Format

4(4) SOTSCB Pointer to SCB (CUB) (representative entry).	
SOTOFFS Entry index number*	

Trailer

Zero (end of table)	
Entry index number*	

*To find the beginning of the SOT when given a pointer to an entry, multiply the entry index number by the SOT entry length and subtract that product from the pointer to the entry.

SELECTION TABLE ENTRY — STE

Program: NCP

Size in bytes: 16(10) for each entry defined at NCP generation.

Created by: NCP generation.

Pointer to STE: CXTSTE in the link-edit map. LKBPSEL, LKBCSEL, or LKBSSEL field in the Link Control Block (LKB) gives indexes into the SDLCST.

Function: Used to change the ACB and SCB control fields for primary or secondary switching.

0(0) STECT Number of table entries. (1st entry only)	1(1) STEOCL Outstanding count limit.	2(2) STELGPT Pointer to the line group table for groups.	
4(4) STESRTLR Second level retry limit.	5(5) STERCMD Run command modifier.	6(6) STETYPE* Line type.	7(7) STEERTRY Text error retry limit.
8(8) STEBUFCT Buffer limit for a receive operation.	9(9) STECPRAT Contact poll rate.	10(A) STEADRC SDLC addressing character.	11(B) STEPCNT Pass limit.
12(C) STEERPT Second level ERP time delay.	13(D) Reserved		

*Indicates that a byte expansion follows.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
6(6) STETYPE	Byte 1	Line type.
	1...	Line is in normal mode.
	.x..	Duplex adapter. 1=Line has 2 line adapter addresses. 0=1 line adapter address.
	..x.	Half-duplex ACB or duplex transmit leg ACB. 1=Half-duplex leg or duplex transmit leg ACB. 0=Duplex receive leg ACB. or Duplex adapter transmit leg ACB. 1=Transmit leg. 0=Receive leg. or SS (WTTY) strip FIGS/LTRS. 1=Strip FIGS/LTRS in received text. or SS (TWX). 1=Odd parity verification. 0=Even parity verification.
	...1	Use data set new sync feature (BSC/SDLC). Half-duplex link on which break is allowed (SS).
	.... x...	Line type bit. 1=BSC. 0=start-stop, SDLC (see bit 7).
	.1..	Remote station can receive error message (BSC). or Time-out valid reply for negative poll (start-stop) or The station is currently a configurable station (SDLC).

Offset/Field Name	Bit Pattern/ Hex Value	Contents
	x .	Point-to-point contention bit (BSC/SDLC). 1=Point-to-point contention secondary station (BSC). 0=Point-to-point contention primary station. or 1=SDLC secondary station. 0=SDLC primary station. or SS (WTTY) shift control. 1=Upshift on space character 0=No upshift on space. or SS (TWX). 1=Parity checking required. 0=No parity checking required.
	x	SDLC link bit. 1=Line type is SDLC (Bit 4=0). 0=Line type is not SDLC.

SCANNER INTERFACE TRACE USAGE TABLE SUT

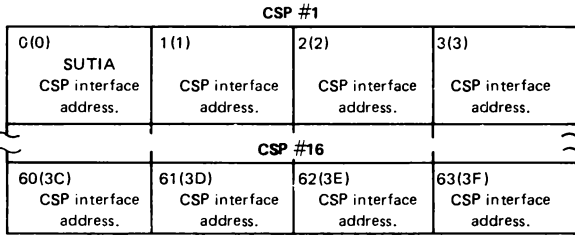
Program: NCP, EP, PEP

Size in bytes: 64(40)

Created by: NCP generation

Pointer to SUT: SYSSUT field in XDA.

Function: Contains communications scanner processor (CSP) interface addresses with which the scanner interface traces (SIT) were started. The table consists of 16 entries, one per scanner, with positions for four one-byte interface addresses per entry. If a SIT is active, a position contains an interface address; if not, the position contains X'FF'.



SUBAREA VECTOR TABLE SVT

Program: NCP

Size in bytes: 4(4) for each transmission group.

Created by: NCP generation.

Pointed to: By entry in the transit routing table (TRT) or SYSSVTP field in HWE + 76(4C).

Function: Contains the address of the transmission group control block (TGB). The first entry in the table is zero. The last entry in the SVT contains a X'FF' delimiter.

0(0)
SVTENT Pointer to a TGB.

STATION CONTROL BLOCK EXTENSION — SXB

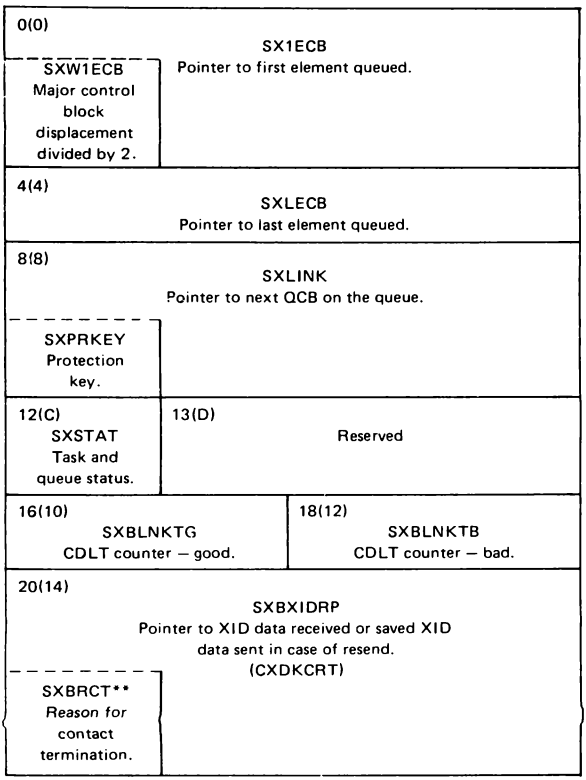
Program: NCP

Size in bytes: 56(38)

Pointer to SXB: SCB + 64 (SCBCFGX)

Created by: NCP generation.

Function: Extension to station control block (SCB) for configurable stations.



**See Contacted RU byte expansion for RU1LDS in section 5.

24(18) SXBAPUA NCP subarea.	26(1A) SXBTGN Transmission group number.	27(1B) SXBMGN Migration transmission group number.
28(1C) SXBLDMOD Load Module Name.		

SDLC Secondary Command Reject Pseudo Buffer

36(24) Pre-Prefix (BHTAG and BHVVTI)		
40(28) SXBUFCHN Buffer Prefix Chain Field.		
44(2C) Reserved	46(2E) SXOFFSET BP Offset Field.	47(2F) SXDATCNT BP Data Count.
48(30) SXBCMDRC CMDR N(S), N(R)	50(32) SXBCMDRX* Command reject flags.	51(33) Reserved
52(34) SXBTGNTR Multilink TG received sequence number.	54(36) SXBTGCTR Multilink TG SDLC received C field.	55(37) Reserved

*Indicates that a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
50(32) SXBCMDRX	Byte 0	CMDR response status equates.
	. . . . 1. . .	N(R) – out of range status mask.
	. . . . .1 . .	I-field too long status mask.
	. . . . . .1 .	I-field not allowed status mask.
	1	Invalid C-field status mask.

TEST CONTROL BLOCK (LINK TEST, LEVEL 2) TCB

Program: NCP

Size in bytes: Variable—depends on length of test data.

Created by: CXDLTI dynamically after receiving a Test Mode command.

Pointer to TCB: SCBLOBH field in the SCB. (TCB is at head of link outbound queue.)

Function: Contains test data to be transmitted to the dedicated resource that is specified in the Test Mode command; maintains counts of the test results.

<table>
<tr><td>32(20)
TCBTFRQ
Total number of test frames to be transmitted.</td><td colspan="2">34(22)
TCBTFR
Number of test frames received without error.</td></tr>
<tr><td>36(24)
Reserved</td><td>38(26)
TCBZEROB
Flags.</td><td>39(27)
TCBNSPS
First byte of prefix X'41'=RU1NS4</td></tr>
<tr><td>40(28)
TCBTFTM
Test frames transmitted each service cycle. (Multipoint)</td><td colspan="2">42(2A)
TCBPUNA
Physical unit network address.</td></tr>
<tr><td>44(2C)
TCBPRID
Procedure identification.</td><td colspan="2">46(2E)
TCBTFMR
Test frames to be transmitted each service cycle. (Multipoint)</td></tr>
<tr><td>48(30)
TCBTFT
Test frames transmitted counter.</td><td colspan="2">50(32)
TCBTTFR
Test frames received counter.</td></tr>
<tr><td>52(34)—n
TCBDATA
Test data.</td><td colspan="2">54(36)
TCBSTAT*
Test termination status. (Overlays test data after the test terminates.)</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
38(26) TCBZEROB	x. . .	1=Test pending. 0=Test not pending.
54(36) TCBSTAT		Test termination status.
	X'0000'	Normal end.
	X'0001'	Ended with error.
	X'0002'	Ended due to link inoperative.
	X'0003'	Test initialization failure.

TIMER EXTENSION TABLE

TET
(EP, PEP)

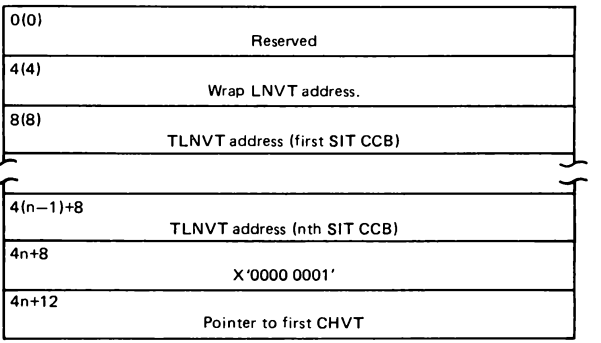
Program: EP, PEP

Size in bytes: 4 times the number of SIT CCB's plus 16.

Created by: EPLT64 stage II macro at EP generation.

Pointer to TET: XDHTET field in the XDH.

Function: Provides timer support for wrap and SIT operations. It is located below 64K and appears to be another CHVT to the timer routine. For each SIT CCB there is one entry in the TET that points to the associated odd TLNVT entry. Addressability to the TET is in the half-word direct addressables (XXCXTXDH) which is set to X'0000FFFF' when wrap is not active.



TRANSMISSION GROUP CONTROL BLOCK TGB

Program: NCP

Size in bytes: 64(40), plus ER extension.

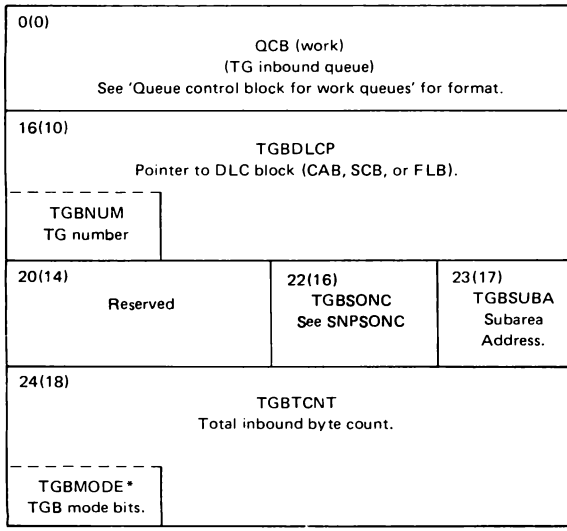
Created by: NCP generation.

Pointer to TGB: CABTGBP field in the CAB, SCBTGBP field in the SCB, FLBTGBP field in the FLB, SVTENT field in the SVT, VRBTGBP field in the VRB.

Referenced by: LINKTGB, RSLVTGB, SETTGB, TESTTGB.

Updated by: LINKTGB, RSLVTGB, SETTGB, TESTTGB, and TG trace processing.

Function: Contains information related to the TG associated with a particular channel or link. There is one TGB for each transmission group.



*Indicates a byte extension follows.

28(1C)
TGBHCNT
High priority inbound count.

TGBSTATE*
TGB state bits.

32(20)
TGBMCNT
Medium priority inbound count.

TGBDLCT*
DLC type.

36(24)
TGBLCNT
Low priority inbound byte count.

TGBNOPR*
DLC not OP reason code.

40(28)
TGBTTHR
Total byte count threshold (20,000).

44(2C)
TGBHTHR
High priority byte count threshold (5000).

48(30)
TGBMTHR
Medium priority byte count threshold (5000).

52(34)
TGBLTHR
Low priority byte count threshold (5000).

56(38)
TGBTRACP
Pointer to the TG trace buffer.

TGBTRACT
Trace count.

60(3C)
Explicit route extension.
(See ERX).

*Indicates a byte extension follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
24(18) TGBMODE		TG mode bits.
	.... .1..	TG active.
	.... ..x.	1=Transitional mode. 0=Normal mode.
	1	Migration mode.
28(1C) TGBSTATE		TG state bits.
	1...	DLC pending.
	.1..	DLC attached.
	..1.	TG operational.
	...1	Fast recovery.
	.... 1...	ER pending operational.
	.... .1..	ER pending inoperative.
	.... ..1.	DLC operational.
		TG state definitions
	X'00'	INOP
	X'04'	ERM.PEND.INOP
	X'4A'	ERM.PEND.OP
	X'56'	PEND.INOP.PEND.OP
	X'5E'	DLC.OP.PEND.ERM.INOP
	X'62'	OP
	X'C0'	DLC.PEND.OP
	X'C4'	DLC.PEND.INOP
	X'D4'	ERM.PEND.INOP.PEND.OP
32(20) TGBDLCT		DLC type.
	X'00'	Channel
	X'04'	SDLC
	X'06'	Multilink TG
36(24) TGBNOPR		DLC not operable reason code.
	X'01'	Unexpected routing interruption-(permanent link error, time-out, or hardware error).
	X'02'	Controlled routine interruption.

TIME AND DATE CONTROL BLOCK — TND

Program: NCP

Size in bytes: 72(48)

Created by: NCP generation.

Pointer to TND: SYSEBCP field in HWE.

Function: Keeps track of current time and date.

<table>
<tr><td colspan="3">0(0)
TNDMDY
Date in the form mm/dd/yy where m = month, d = day, and y = year.
(length of 8 bytes)
6(6)
TNDYDOY
Julian date in the form yy.ddd where y = year and d = day. (The yy part of this field overlaps the yy part of the previous field.)</td></tr>
<tr><td colspan="3">12(C)
TNDHMS
Time in the form hh.mm.ss where h = hour, m = minute, and s = second.</td></tr>
<tr><td>20(14)
TNDUSKIP*
Inhibit or allow update of TND.</td><td>21(15)
TNDFLAG*
Time and date valid flag for MOSS.</td><td>22(16)
Reserved</td></tr>
<tr><td>24(18)
TNDMT1
First month</td><td colspan="2">26(1A)
TNDJANL
Number of days in January.</td></tr>
<tr><td>28(1C)
TNDMT2
Second month.</td><td colspan="2">30(1E)
TNDFEBL
Number of days in February.</td></tr>
<tr><td>32(20)
TNDMT3
Third month.</td><td colspan="2">34(22)
TNDMARL
Number of days in March.</td></tr>
<tr><td>36(24)
TNDMT4
Fourth month.</td><td colspan="2">38(26)
TNDAPRL
Number of days in April.</td></tr>
<tr><td>40(28)
TNDMT5
Fifth Month.</td><td colspan="2">42(2A)
TNDMAYL
Number of days in May.</td></tr>
</table>

*Indicates that a byte expansion follows.

44(2C) TNDMT6 Sixth Month.	46(2E) TNDJUNL Number of days in June.
48(30) TNDMT7 Seventh Month.	50(32) TNDJULL Number of days in July.
52(34) TNDMT8 Eighth Month.	54(36) TNDAUGL Number of Days in August.
56(38) TNDMT9 Ninth Month.	58(3A) TNDSEPL Number of days in September.
60(3C) TNDMT10 Tenth Month	62(3E) TNDOCTL Number of days in October.
64(40) TNDMT11 Eleventh Month.	66(42) TNDNOVL Number of days in November.
68(44) TNDMT12 Twelfth Month.	70(46) TNDDECL Number of days in December.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
20(14) TNDUSKIP		Inhibit or allow update of TND.
	X'00' Non-zero	Inhibit update. Allow update.
21(15) TNDFLAG		Time and date valid flag for MOSS.
	1...	Indicates the time and date is valid.

LINE TRACE DATA

TRACE DATA (LINE)

Program: NCP

Size in bytes: 5(5) Character mode; 5(5) or more for Normal mode; 3(3) Truncated data message.

Created by: NCP line trace routine.

Pointer: LTCB fields point to a buffer or a buffer chain containing the following formats.

Function: The NCP line trace stores five bytes (character mode) or at least five bytes (normal mode) of diagnostic information into a trace entry whenever a level 2 interrupt occurs. The source of the normal mode line trace entry information is indicated by the prefix flag; PSA parameter area, PSA status area, receive data, or transmit data. Line trace stores the PSA parameter and status areas for level 2 interrupts and also any associated received or transmit data. The NCP stores the trace entries in dynamically allocated buffers and then transfers them to the host with a Record Trace Data (RECTRD) PIU. See the "Control Block Relationships for NCP Line Trace" in Section 1.

Character Mode Line Trace Entry

0(0)	1(1)	2(2)	3(3)	4(4)
LCD-PCF (PSASLCPC)	Timer field**	SCF (PSASSCF)	PDF (PSASPDF)	TCC (PSAPTCC)

Normal Mode Line Trace Entry

0(0)	1(1)	3(3)	4(4)
Prefix flag*	Byte count	Pad byte / Time field** (P prefix)	Start of parameter/ status/ data***

*Indicates a byte expansion follows.

**Contains a hex value indicating, in tenths of a second, the time that elapsed between the activation of the trace and the level 2 interrupt represented by this entry. The field is reset to 0 when the trace starts and wraps around to 0 after 25.5 seconds.

***Value of prefix flag indicates the type of entry starting in 4(4). See the PSA control block and its foldouts for the format of the parameter or status area by commands.

Normal Mode Truncated Data Message**

0(0)	1(1)	2(2)
@ character X'7C'	T character X'E3'	D character X'C4'

****Appears immediately following truncated data in line trace buffer.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0)		Prefix flag.
	X'D7'	P=PSA parameter area.
	X'D9'	R=Receive data.
	X'E2'	S=PSA status area.
	X'E7'	X=Transmit data.

SCANNER INTERFACE TRACE DATA

Program: NCP, EP, PEP

Size in bytes: 4 bytes plus variable data size.

Created by: Communication scanner processor (CSP) processing the SIT.

Pointer: NCP—SIT LTCB fields point to a buffer or a buffer chain containing the following entry formats.

EP—TLNVT fields (X'840') contains a pointer to the SIT CCB that contains a pointer to SIT buffer 1 and SIT buffer 2. Each buffer starts with a header.

Function: The scanner interface trace (SIT) records information indicating actions taken by the CSP as a result of the IOH commands received from the NCP or EP. This information includes the IOH issued, the associated PSA and any data transmitted or received. The checkpoint trace is initiated only by MOSS microcode.

NCP transfers the trace entries to the host with a Record Trace Data (RECTRD) PIU.

EP transfers the trace entries to the host by means of the dynadump function.

EP SIT Buffer Header

0(0) Identification X'000D'	2(2) Sequence number.
4(4) Scanner line interface address.	6(6) Data count.

The following trace entries are common to NCP and EP.

Checkpoint Trace Entry

0(0) Identifier=C. X'C3'	1(1) Data Count. X'0005' (includes pad byte)	3(3) Pad. X'00'
4(4) L3 Pointer.	6(6) Interface control block status.	7(7) Interface control block control.

IOH Issued Entry

0(0) Identifier=I. X'C9'	1(1) Data Count. X'0005' (includes pad byte)	3(3) Pad X'00'
4(4) Tag address (TA)		6(6) Tag data (TD)

Parameter Area Entry

0(0) Identifier=P. X'D7'	1(1) Data count. (includes pad byte)	3(3) Pad X'00'
4(4)—n PSA parameter area.**		

Received/Transmitted Data Entry

0(0) Identifier R=X'D9' X='E7'	1(1) Data count.	3(3) Pad X'00'
4(4)—n Data burst (Maximum 4 HW per entry)		
n+1 Front end scanner* parameter and status.		

Status Area Entry

0(0) Identifier=S. X'E2'	1(1) Data count. (includes pad byte)	3(3) Pad. X'00'
4(4)—n PSA status area.**		

Overrun Entry

0(0) Identifier (any of above)	1(1) Data count X'0001' (for pad byte)	3(3) Pad X'00'

*Indicates a byte expansion follows.

**Only that portion of the PSA parameter/status area that is used by the IOH command is recorded. This area is left justified with the unused portion (to the right of the last used field) truncated.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
n+1	Byte 0	Front end scanner parameter.
	1.	Burst not valid.
	.0	Not start.
	. .x	Interrupt request.
	. . .0	Not EP mode (receive), or Not MCC remember (transmit).
	. . . . 0. . .	No PDF pointer.
	xxx	Byte count of data burst. 000=1 byte 111=8 bytes.
	Byte 1	Front end scanner status.
	x. . . xx. . (receive)	000=Data (all). 100=Stop check (SS). 001=Flag OK. (SDLC) 011=Flag off boundary. (SDLC) 100=Abort. (SDLC) 101=CRC check. (SDLC) 110=Idle. (SDLC) 111=Force 0 (BSC) 011=Enter normal (A/E) 100=VRC error in. (A/E) 110=Enter transparent (A/E)
	0.	(transmit)
	.x	Character service
	. .x	Overrun (receive). Underrun (transmit).
	. . .x	Modem change.
	. . . . x. . .	EOT (transmit).
	. . . . .x . .	Transmit end (transmit).
	. . . . . .0C	Reserved Note: When not specified, the values apply to receive and transmit.

CHANNEL ADAPTER TRACE TABLE

Program: NCP

Size in bytes: 20(14) plus 48(30) bytes per trace entry (number of entries is user specified).

Location: $LVL5—identifier characters "CTRC."

Created by: NCP generation.

Function: Contains traces for NCP channel adapter interrupts.

Type 5 Channel Adapter Trace Table

0(0) TTRECNTR Recurrent entries counter.	2(2) TTSKPCNT Skipped entries counter.
4(4) Address of the beginning of the trace table.	
8(8) Current address of the trace table.	
12(C) Address of the end of the trace table.	
16(10) CTRC Contains the identifier characters "CTRC".	
20(14) Variable-length table extended by 48(30) bytes per trace entry. See Trace Entry: Type 5 Channel Adapter, for format.	

Trace Entry: Type 5 Channel Adapter

0(0) TRCTID* Trace ID eyecatcher.	1(1) TRCRID* Return ID.	2(2) Recurrent counter.	3(3) Skipped entry counter.
4(4) CABPFAD PEP flag.	5(5) CABTRCF Trace flag.	6(6) CAB062RB Output 62 request bucket.	
8(8) CABCNTL CA contact control flags.		10(A) TIMTENTH Tenths of a second counter.	
12(C) CABICND Condition flags on entry.		14(E) CABCND Channel condition flags.	
16(10) CABXR77 Contents of external register X'77'.		18(12) CABXR60 CA input register X'0'.	

Note: The trace entries are loaded from the CAB control block, See the CAB for Field definitions.

20(14) CABXR61 CA input register X'1'.	22(16) CABXR62I CA input register X'2'.
24(18) CABXR620 CA output register X'2'.	26(1A) CABXR6C CA output register X'C'.
28(1C) CABXR66 CA external register X'6'.	30(1E) CABXR67I CA input register X'7'.
32(20) CABXR67O CA output register X'7'.	34(22) CABXR6F CA external register X'F'.
36(24) CABXR3M CA output register X'3M' where M has the value 0 through 5 depending upon the CA address.	
40(28) CABCPIU1 Address of the first buffer of the last PIU passed to path control.	
44(2C) CABSENSE Sense byte in the CAB.	45(2D) Address of caller.

Note: The trace entries are loaded from the CAB control block. See the CAB for field definitions.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) TRCTID		Trace ID eyecatcher
	C'T' C'R' C'S'	Normal trace entry. Recurrent trace entry. Skipped trace entry.
1(1) TRCRID		Return ID
	C'A–Z', C'@', C'#', C'$'	Last character of *label in* SYSCB006. Example – character 'A' is loaded using label TRCRIDA before branching to the trace routine (CXCACTRC). B=TRCRIDB, C=TRCRIDC, and so forth.

DISPATCHER TRACE TABLE

TRACE TABLE (DISPATCHER)

Program: NCP

Size in bytes: 12(C) bytes plus 200 fullword entries; total is 812 (32C).

Location: Label DSPX000 in the link edit map.

Created by: CXDCG002 module.

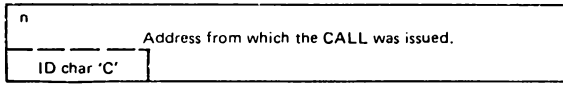
Function: Traces the dispatched active QCB and its first element queued, and any CALLs, subtask sequences, and control router entries.

0(0)	Pointer to the next table entry.
4(4)	Identifier characters 'DISP'.
8(8)–807(327)	200 fullwords of trace data.
808(328)	Identifier characters 'TEND'.

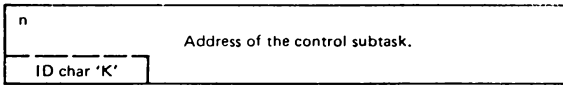
Dispatcher Entry

n ID char 'U'	Active QCB address.
n+4 RNTIME Time QCB was dispatched.	Address of first element queued.
n+8 ID char '0'	Task entry point.

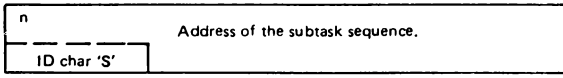
CALL Entry



Control Router Entry



Subtask Sequence Entry



TRACE TABLE (EP, PEP)

Program: EP, PEP

Size in bytes: 8 for each entry.

Created by: EP generation or trace routine (CYKTRC/CYLTRC).

Function: Provides line and channel trace for selected subchannel addresses. One entry is made for each level 3 interrupt. Multiple entries are made for level 2 interrupts.

Level 2 Trace Entry (Part 1)
Character Mode

0(0) Entry id. X'11'	1(1) Channel adapter. 0–5	2(2) Multiplexer subchannel address. (CCBSUBCH)	3(3) Trace correlation counter. PSATCC)
4(4) Reserved.	5(5) Level 2 interrupt address. (CCBL2)		

Level 2 Trace Entry (Part 2)
Character Mode

0(0) Entry id. X'12'	1(1) Status control field. (PSASSCF)*	2(2) Parallel data field. PSASPDF)	3(3) Line communi-cation status. (PSALCS)*
4(4) Primary control field. (PSASPCF)*	5(5) Serial data field. (PSASSDF)	6(6) Modem-in. (PSAMDIN)*	7(7) Modem-out. (PSAMDOUT)*

Level 2 Trace Entry (Part 3)
Character Mode

0(0) Entry id. X'13'	1(1) Line request Information. (CCBLRI)*	2(2) Character address counter. (CCBCAC)*	3(3) Service/status flag byte. (CCBSVSTC)*
4(4) CCB line vector table address. (CCBLNVT)		6(6) Current command for CCB. (CCBCMD)*	7(7) Sense**

*Refer to the EP CCB for byte expansions.
**CCBSENSE field ORed with CCBSENS field.

Level 2 Trace Entry (Part 4)
Character Mode—High Priority S/S

0(0) Entry id. X'14'	1(1) S/S control flag byte. (CCBSSC)*	2(2) S/S control flag extension. (CCBSSCX)*	3(3) S/S high priority buffer count. (CCBHPCNT)
4(4) Reserved	5(5) S/S high priority data store address. (CCBL2PTR)		

Level 2 trace Entry (Part 5)
Character Mode—High Priority BSC

0(0) Entry id. X'15'	1(1) Flag byte 1 status. (CCBFLGB1)*	2(2) Flag byte 2 terminal status. (CCBFLGB2)*	3(3) Data service count. (CCBNQCNT)
4(4) Reserved.	5(5) Level 2 character address. (CCBL2NCA)		

Level 2 Trace Entry (Part 1)
Normal Mode

0(0) Entry id. X'21'	1(1) Channel adapter. 0–5	2(2) Multiplexer subchannel address. (CCBSUBCH)	3(3) Trace correlation counter. (PSATCC)
4(4) Reserved	5(5) Level 2 interrupt address. (CCBL2)		

Level 2 Trace Entry (Part 2)
Normal Mode

0(0) Entry id. X'22'	1(1) Status control field. (PSASSCF)*	2(2) Current command. (PSACCMD)	3(3) Secondary status. (PSASES)*
4(4) Line communi-cation status. (PSALCS)*	5(5) Residual count. (PSARCNT)	6(6) Modem-in.† (PSAMDIN)*	7(7) Modem-out.† (PSAMDOUT)*
		Second buffer count. (CCBBCNT)	First Buffer count. CCBTCNT)

*Refer to the EP CCB for byte expansions.
†For Enable, Disable, Dial, Monitor Incoming Call, and Wrap commands.

Level 2 Trace Entry (Part 3)
Normal Mode

0(0) Entry id. X'23'	1(1) Second cycle steal buffer address. (CCBBBUF)
4(4) Byte count.**	5(5) First cycle steal buffer address. or Pointer to ACU buffer. (CCBTBUF)

**The number of data bytes is equal to the value of PSACNT minus PSARCNT. (Refer to the EP CCB.)

Level 2 Trace Entry (Parts 4—n)
Normal Mode

0(0) Entry id.*** X'24'	1(1)—7(7) Seven bytes of data from the buffer pointed to by the pointer in the PSA. (Refer to the EP CCB.)

***For Receive and Receive Continue commands when the line data option is "with data."

Level 3 Initial Select Trace Entry
(Part 1)

0(0) Entry id. X'31'	1(1) Channel adapter. 0—5	2(2) Initial selection address and I/O command byte. (Input X'1')	
4(4) Initial selection control (Input X'0' high-order byte)	5(5) Current status (CCBCSTAT)*	6(6) Current command for CCB. (CCBCMD)*	7(7) Current sense (CCBCSENS)*

Level 3 Initial Select Trace Entry
(Part 2)

0(0) Entry id. X'32'	1(1) CCB address.
4(4) CCB line vector table address. (CCBLNVT)	6(6) Reserved.

*Refer to the EP CCB for byte expansions.

Level 3 Timer Interval Expiration Trace Entry

0(0) Entry id. X'41'	1(1) Channel adapter. 0–5	2(2) Multiplexer subchannel address. (CCBSUBCH)	3(3) Time-out routine displacement into branch table. (CCBTMADR)
4(4) Reserved.	5(5) Configuration flags. (CCBCFLG)*	6(6) Current command for CCB. (CCBCMD)*	7(7) Reserved.

Level 3 Status Transfer Trace Entry

0(0) Entry id. X'51'	1(1) Channel adapter. 0–5	2(2) ESC address and status bytes. (Input X'3')	
4(4) Data/status control (Input X'2')		6(6) Current command for CCB. (CCBCMD)*	7(7) Sense**

**CCBSENS field ORed with CCBSENSE field.

Level 3 Data Transfer Trace Entry (Part 1)

0(0) Entry id. X'61'	1(1) Channel adapter. 0–5	2(2) ESC address. (Input X'3' high-order byte)	3(3) Reserved.
4(4) Data/status control (Input X'2')		6(6) Reserved	

Level 3 Data Transfer Trace Entry (Part 2)
Character Mode

0(0) Entry id. X'62'	1(1) Reserved		
4(4) Data buffer bytes. (Input X'4')		6(6) Data buffer bytes. (Input X'5')	

*Refer to the EP CCB for byte expansions.

Level 3 Data Transfer Trace Entry (Part 3)
Character Mode—Not High Priority

0(0) Entry id. X'63'	1(1) Line request information. (CCBLRI)*	2(2) Reserved.	3(3) Service/status flag byte. (CCBSVSTC)*
4(4)—7(7) Reserved			

Level 3 Data Transfer Trace Entry (Part 3)
Character Mode—High Priority S/S

0(0) Entry id. X'64'	1(1) Line request information. (CCBLRI)*	2(2) S/S high priority buffer count. (CCBHPCNT)	3(3) Service/status flag byte. (CCBSVSTC)*
4(4) Reserved.	5(5) S/S high priority data service address. (CCBL3PTR)		

Level 3 Data Transfer Trace Entry (Part 3)
Character Mode—High Priority BSC

0(0) Entry id. X'65'	1(1) Line request information. (CCBLRI)*	2(2) Data service count. (CCBNQCNT)	3(3) Service/status flag byte. (CCBSVSTC)*
4(4) Reserved	5(5) Level 3 character address. (CCBL3SCA)		

Level 3 Data Transfer Trace Entry (Part 2)
Normal Mode

0(0) Entry id. X'66'	1(1) Channel adapter pointer register. (Input '3x')**		
4(4) Cycle steal mode control register. (Input X'C')		6(6) Second buffer count. (CCBBCNT)	7(7) First buffer count. (CCBTCNT)

*Refer to the EP CCB for byte expansions.

***The "x" is the channel adapter 0—5 from the CASEL field in the CHCB.*

Level 3 Data Transfer Trace Entry (Part 3)
Normal Mode

0(0) Entry id. X'67'	1(1) Second cycle steal buffer address. (CCBBBUF)
4(4) Buffer size or Auto call dial digits. (CCBBUFSZ)	5(5) First cycle steal buffer address. or Pointer to ACU buffer. (CCBTBUF)

MSLA Line Swap Trace Entry

0(0) Entry id. X'71'	1(1) X'00'	2(2) "To" subchannel.	3(3) "From" subchannel.
4(4) "To" CHCB pointer.		6(6) "From" CHCB pointer.	

Common Scanner Processor IOH Issued Trace Entry (Part 1)

0(0) Entry id. X'81'	1(1) Channel adapter. 0–5	2(2) Multiplexer subchannel address. (CCBSUBCH)	3(3) PSA byte 0*
4(4) PSA byte 1*	5(5) PSA byte 2*	6(6) PSA byte 3*	7(7) PSA byte 4*

Common Scanner Processor IOH Issued Trace Entry (Part 2)

0(0) Entry id. X'82'	1(1) PSA byte 5*	2(2) PSA byte 6*	3(3) PSA byte 7*
4(4) PSA byte 8*	5(5) PSA byte 9*	6(6) PSA byte 10*	7(7) PSA byte 11*

*Refer to the PSA in the EP CCB for field definitions.

Common Scanner Processor IOH Issued Trace Entry (Part 3)

0(0) Entry id. X'83'	1(1) IOH instruction address.
4(4) Tag address. (CCBTA)	6(6) Tag data. (CCBTD)

Common Scanner Processor IOH Issued Trace Entry (Part 4—n)

0(0) Entry id. X'84'	1(1)—7(7) Seven bytes of data from the buffer pointed to by the pointer in the PSA.

TRACE TABLE (SDLC, LEVEL 3 I/O)

Program: NCP

Size in bytes: 16(10) bytes + 40 entries at 24(18) bytes each — 976(3D0) bytes total.

Created by: CXDCG0D module.

Located: After CSECT CXECEND (CXDCG0D).

Function: Traces I/O level 3 interrupts for SDLC lines.

SDLC I/O Level 3 Trace Table

0() Current table entry
4(4) Table end
8(8) Table beginning
12(C) Entry length

Trace Entry

0(0) DLCTCCBP ACB address		2(2) DLCTSTS1 CCBSTAT1	
4(4) DLCTEND1 CCBEND1		6(6) DLCTESTS CCBESTAT	
8(8) DLCTCTL CCBCTL	9(9) DLCTRBLC CCBRBLUC(Rcv) TIMEFLD (Xmit)	10(A) DLCTCFLD CCBCFLD	11(B) DLCTAFLD CCBAFLD
12(C) DLCTNRNS SCB N(R)/n(S) - - - - - - - - - - - - - - - DLCTCMD *Command if run not active*		14(E) DLCTPNS SCBPNS	15(F) DLCTNSQ SCB NSQ
16(10) DLCTCOC SCBCOC	17(11) DLCTLNRP CCBLNRP	18(12) DLCTL2 CCBL2	
20(14) DLCTL3 CCBL3		22(16) DLCTRTCT SCBRTCNT	

SUPERVISOR CALL TRACE TABLE

Program: NCP

Size in bytes: 24(18) bytes plus 300 fullword entries—1224(4C8) bytes total.

Location: Label CXASVCTR in the link edit map.

Created by: CXDCG01 assembly.

Function: Traces up to eight registers for every supervisor call macro issued from interrupt level 5.

<table>
<tr><td colspan="2">0(0)
Pointer to the next table entry to be used.</td></tr>
<tr><td>4(4)
SVCRGALL*
Trace-all-registers option.</td><td>5(5)
Identifier characters 'SVC'.</td></tr>
<tr><td colspan="2">8(8)–1207(4B7)
300 fullwords of trace data.
(See the trace entry formats following the trace table.)</td></tr>
<tr><td colspan="2">1208(4B8)
Identifier characters 'SVCTBEND'.
(8 bytes)</td></tr>
<tr><td>1216(4C0)
Character L.
(X'D3')</td><td>1217(4C1)
Low address of range to be traced.
(Default=X'000000')</td></tr>
<tr><td>1220(4C4)
Character H.
(X'C8')</td><td>1221(4C5)
High address of range to be traced.
(Default=X'FFFFFF')</td></tr>
</table>

*Indicates a byte expansion follows.

Trace Entry Format

n TENTHTMR Saved timer value from XDH TIMTEMTH (TIMH6).	n+1 Level 5 IAR (Register 0).
n+4 Character 3. X'F3'	n+5 Level 5 register 3.
n+8 Character 5. X'F5'	n+9 Level 5 register 5.
n+12(C) Character 7. X'F7'	n+13(D) Level 5 register 7.

Additional Trace Entry Format When the Trace-All-Registers Option Is Selected.

n+16(10) Character 1. X'F1'	n+17(11) Level 5 register 1.
n+20(14) Character 2. X'F2'	n+21(15) Level 5 register 2.
n+24(18) Character 4. X'F4'	n+25(19) Level 5 register 4.
n+28(1C) Character 6. X'F6'	n+29(1D) Level 5 register 6.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) SVCRGALL		Trace-all-registers option
	X'00'	Trace all level 5 registers.
	X'40'	Trace only registers 0, 3, 5, and 7.

TRACE CONTROL TABLE

Program: EP, PEP

Size in bytes: 24(18)

Created by: NCP or EP generation

Referenced by: CYKTRC, CYLTRC, and CYKDSS

Function: Provides control of the trace table.

<table>
<tr><td colspan="3">0(0)
CURENTRY
Address of the current trace entry.</td></tr>
<tr><td colspan="3">4(4)
FRSTBLK
Address of the first entry in the trace table.</td></tr>
<tr><td colspan="3">(8(8)
LSTBLKEN
Address of first byte after the trace table.</td></tr>
<tr><td colspan="3">12(C)
CURRBLK
Address of buffer containing current entry.</td></tr>
<tr><td colspan="3">16(C)
CURBLKEN
Address of first byte after end of current buffer.</td></tr>
<tr><td>20(14)
TRCFLAGS*
Flag byte.</td><td>21(15)
WRAPCNTR
Counter for trace table wrap.</td><td>22(16)
SEQNO
Current sequence number of buffer being filled with trace entries.</td></tr>
</table>

*Indicates a byte expansion follows.

Offset/ Field Name	Bit pattern/ Hex Value	Description
20(14) TRCFLAGS		Flag byte
	1.	Dump is waiting for entry.
	.1	Dump is active now.
	. .1	Trace is active now.
	. . . . . .1 .	Level 2 trace flag.
	1	Level 3 trace flag.

TRANSIT ROUTING TABLE *TRT*

Program: NCP

Size in bytes: Variable; eight bytes + eight bytes per TRT row. The number of TRT rows is specified by the RMBTRTCT field in the route management block (RMB).

Created by: NCP generation.

Pointer to TRT: SYSTRTP field in HWE + 80(50) and subarea vector table (SIT).

Function: Contains indexes into the subarea vector table (SVT).

0(0) Zeros			
8(8) ER0	9(9) ER1	10(A) ER2	11(B) ER3
12(C) ER4	13(D) ER5	14(E) ER6	15(F) ER7

TIME VALUE SELECT TABLE TVS

Program: NCP

Size in bytes: 64(40)

Created by: NCP generation.

Pointer to TVS: SYSTVSP field in HWE.

Function: Contains fixed and optional time-out values. This table must be at a 256-byte boundary.

0(0) TVSHI0 Fixed (Idle/RAS).	2(2) TVSHI1 Fixed (0 seconds).
4(4) TVSHI2 Fixed (1 second).	6(6) TVSHI3 Fixed (2.2 seconds).
8(8) TVSHI4 Fixed (3 seconds).	10(A) TVSHI5 Fixed (23.5 seconds).
12(C) TVSHI6 Fixed (60 seconds).	14(E) TVSHI7 Fixed (4.2 seconds)
16(10) TVSHI8 Fixed (6.5 seconds).	18(12) TVSHI9 Variable.*
20(14) TVSHIA Variable.*	22(16) TVSHIB Variable.*
24(18) TVSHIC Variable.*	26(1A) TVSHID Variable.*
28(1C) TVSHIE Variable.*	30(1E) TVSHIF Variable.*

*Values determined at NCP generation

32(20) TVSLO0 Fixed (Idle/RAS).	34(22) TVSLO1 Fixed (0 seconds).
36(24) TVSLO2 Fixed (1 second).	38(26) TVSLO3 Fixed (2.2 seconds).
40(28) TVSLO4 Fixed (3 seconds).	42(2A) TVSLO5 Fixed (23.5 seconds).
44(2C) TVSLO6 Fixed (60 seconds)	46(2E) TVSLO7 Fixed (4.2 seconds).
48(30) TVSLO8 Fixed (6.5 seconds).	50(32) TVSLO9 Variable.*
52(34) TVSLOA Variable.	54(36) TVSLOB Variable.*
56(38) TVSLOC Variable.*	58(3A) TVSLOD Variable.*
60(3C) TVSLOE Variable.*	62(3E) TVSLOF Variable.*

*Values determined at NCP generation.

USER ADAPTER CONTROL BLOCK UACB

Program: NCP

Size in bytes: Variable

Created by: NCP generation.

Pointer to UACB: ULVT

Function: User-defined control block which must contain certain required fields in order for user-written line control to function within the NCP interrupt mechanism.

<table>
<tr><td colspan="2">0(0)
User line information.</td></tr>
<tr><td colspan="2">40(28)
CCBTACB
Pointer to next UACB in the timer chain.</td></tr>
<tr><td>44(2C)
CCBWORK
Timer work entry for this UACB.</td><td>46(2E)
CCBTIME
Time-out interface.</td></tr>
<tr><td>48(30)
CCBBAR
Pointer to LNVT entry (backward pointer)</td><td>50(32)-103(67)
User line information.</td></tr>
<tr><td colspan="2">104(68)
CCBLINK
Pointer to next UACB in chain</td></tr>
<tr><td>108(6C)
GCBFLAGS*
UACB identifier flag.</td><td>109(6D) thru n
User line information.
(Continues at 128(80) if greater than 15(F) bytes)</td></tr>
<tr><td colspan="2">124(7C)
UACBGCBP
Pointer to the associated GCB.</td></tr>
<tr><td colspan="2">128(80) thru n
User line information (continued)</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansion

Offset/Field Name	Bit Pattern/ Hex Value	Contents
108(6C) GCBFLAGS		UACB identifier flags.
	.....x.	1=User-written line control. 0=IBM-supported line control (CCB). Must be 1 in a UACB or GCB.
	10	Identifies block as GCB.
	11	Identifies block as UACB.

USASCII CHARACTER DECODE DISPLACEMENT TABLE

UCDDT
(EP, PEP)

Program: EP, PEP

Size in bytes: 32(20)

Located in: Module CYABL, CYATST/CYEBL and CYETST

Created by: NCP or EP generation.

Referenced by: CYATAPH5,CYARAPH5,CYATST, CYETST

Function: Provides offset in branch table for proper control character processing.

0(0)–31(1F)
ASCRCVBT Displacement data.

USER LINE VECTOR TABLE

Program: NCP

Size in bytes: Variable, depending on number of user-line-control lines.

Created by: NCP generation

Referenced by: User level 2 routines

Function: Allows the user's level 2 routines to find a line's UACB when only the line address is known.

0(0)	Address pointer to UACB (See note.)
4(4) thru n	Four bytes corresponding to each NCP generated line interface address.

Note: An entry for a non-user-line-control line will be all zeros.

UNASSIGNED SUBCHANNEL CONTROL BLOCK USCCB (EP, PEP)

Program: EP, PEP

Size in bytes: 60(3C)

Created by: NCP and EP generation

Function: Used to handle sense, TIO, and I/O No-op to subchannels within the high/low range that have no lines. Also used for subchannels that are defined in a multi-subchannel line access (MSLA) association and that are not currently using the line.

32(20) Reserved		34(22) CCBCHADR Channel control block pointer.	
36(24)–43(2B) Reserved			
44(2C) CCBRADR** Multi-subchannel line address CCB address.			
48(30)–55(37) Reserved			
56(38) CCBSUBCH Subchannel address.	57(39) CCBCFLG* Configuration flags.	58(3A) CCBSTAT* Final line status.	59(3B) CCBSENSE* Final line sense.
60(3C) CCBL1STA Status byte.	61(3D) CCBL1SEN Sense byte.	62(3E) CCBL1CSP* CSP error flags.	63(3F) CCBL1CAF* CA error flags.
64(40) CCBCMD Current command for CCB.	65(41) CCBLRI* Line request information.	66(42) CCBCSTAT* Current status.	67(43) CCBCSENS* Current sense.
68(44)–87(57) Reserved.			
88(58) CCBDS62 X'74'	89(59) Reserved.		

*Reference EP CCB for byte expansion.
**CCBRADR is included for MSLA subchannels only.

VIRTUAL ROUTE ACCESS TABLE VAT

Program: NCP

Size in bytes: Three, plus the value of the NUMHSAS operand in the BUILD macro.

Created by: NCP generation.

Pointed to by: CXTVAT in the link-edit map and the SYSVATP field in HWX + 32(20).

Function: Each entry corresponds to a virtual route status table (VST) row. Each entry keeps a count of the number of nonzero entries (active VRs) in a row of the VST. If the count is zero, the VST row is available.

0(0) Length	1(1) Active VR count/VST row.	n+1 Count*	n+2 X'FF'

*The count in the next to last entry is always greater than zero thereby reserving a row of the VST for internal VRs.
n = NUMHSAS

VIRTUAL ROUTE SUBAREA INDEX TABLE VIT

Program: NCP

Size in bytes: MAXSUBA+1.

Created by: NCP generation.

Pointed to by: CXTVIT in the link-edit map and the SYSVITP field in HWX + 28(1C).

Function: Each VIT entry corresponds to a subarea and indexes a virtual-route-status-table (VST) row. The VIT entry is dynamically inserted whenever an Activate Virtual Route command is successfully processed. The VIT entry is zero if the corresponding subarea has not been assigned a VST row.

One VIT entry is set during NCP generation to always index the last row of the VST for use by internal VRs. This VIT entry is the one corresponding to the NCP subarea that contains the virtual route subarea index table.

0(0) Length	1(1) VST index/0 (first subarea)	2(2) VST index/0		n VST index/0 (last subarea)

n = MAXSUBA value

PROGRAMMED RESOURCE VIRTUAL LINE BLOCK — *VLB*

Program: NCP

Size in bytes: 44 (2C)

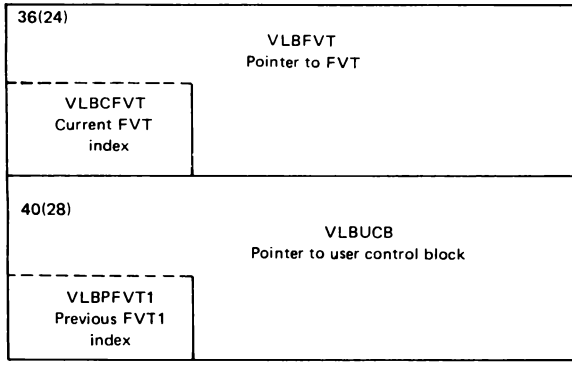
Created by: NCP generation

Pointer to VLB: NPBVLB field in NPB, RVTRP field in RVT.

Function: Contains information about a programmed resource line.

0(0) - 23(17) Queue control block			
24(18) Reserved	25(19) VLBPFVT3 Previous FVT3 index	26(1A) VLBNETAD Network address of programmed resource virtual line	
28(1C) VLBPUVT Pointer to PU vector table			
VLBTYPE Block identifier field X'01'			
32(20) VLBSNP SNP mask—identifies owning SSCP	33(21) VLBNOTFY* Notify task information byte	34(22) VLBPFVT2 Previous FVT2 index	35(23) Reserved

Note: The VLB fields must remain in the same relative position as their counterparts in the NLX, NLB, and NPB.
*Indicates that a byte expansion follows.



Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
32(21) VLBNOTFY		Notify task information byte.
	1...	Resource undergoing ANS.
	.1..	Resource entered held state.
	..1.	Resource exited held state.
	...1	Deactivate virtual route status received.
	.... 1...	Virtual route inoperative status received.
	.... .1..	Lost session partner.

VIRTUAL ROUTE CONTROL BLOCK VRB

Program: NCP

Size in bytes: 96(60)

Created by: NCP generation.

Pointer to VRB: VVTVRBP field in the virtual route vector table (VVT).

Function: Contains virtual routing and flow control information.

<table>
<tr><td colspan="3">0(0)
VRBCHPF
Pointer to the first VR resource connection block (RCB) on the RCB chain.</td></tr>
<tr><td colspan="3">4(4)
VRBCHPL
Pointer to the last VR RCB on the RCB chain.</td></tr>
<tr><td colspan="2">8(8)
VRBRECSQ
Next expected sequence number from received PIUs. (right 12 bits)</td><td>10(A)
VRBXMTSQ
Sequence number for next PIU to be sent. (right 12 bits)</td></tr>
<tr><td colspan="2">12(C)
Reserved</td><td>14(E)
VRBOSAF
Origin subarea of VR.</td></tr>
<tr><td colspan="3">16(10)
VRBTGBP
Pointer to the transmission group control block (TGB).</td></tr>
<tr><td>20(14)
VRBFCFLG*
Status flags.</td><td>21(15)
VRBFLAGS*
Status flags.</td><td>22(16)
VRBPIUCT
Buffer counter.</td></tr>
<tr><td colspan="2">24(18)
VRBERVR
VRBERNS* ER numbers. | VRBVRID* VR identifier.</td><td>26(1A)
VRBXMTQC
VR transmit queue count.</td></tr>
</table>

*Indicates a byte expansion follows.

28(1C) VRBMWIND VR max window.	29(1D) VRBWIND Current VR window size.	30(1E) VRBWCNT VR window count.	31(1F) VRBINOPC* VR inop code.
32(20) VRBXMTQ VR transmitter QCB or VR inop task QCB.			
56(38) VRBWAKQ VR wake-up QCB or session-outage-notification scan QCB.			
80(50) VRBVVTI Virtual-route-vector-table index.		82(52) VRBOSAFL Origin subarea (left justified).	83(53) VRBLWIND VR minimum window.
84(54)-95(5F) VRBBEECB VR buffer event ECB.			

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
20(14) VRBFCFLG		Status flags.
	1...	Send VR pacing response.
	.1..	VR pacing response received.
	..1.	VR pacing request received.
	...1	VR in hold state.
	.... 1...	Notify blocked tasks.
	.... .1..	Change window indicator (CWI) found on in the last window.
	.... ..1.	Exited slowdown.
	1	Buffer event.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
21(15) VRBFLAGS		Status flags.
	1...	VR inoperative.
	.1..	VR in migration mode.
	..1.	Session outage notification (SON) triggered.
	...1	Internal virtual route.
	.... ..1.	VR out of sequence (discarding PIUs).
24(18) VRBERNS		
	xxxx	Initial explicit route number.
	 xxxx	Reverse explicit route number.
25(19) VRBVRID		Virtual route identifier.
	xxxx	Virtual route number (VRN).
	xx	Transmission priority field (TPF).
31(1F) VRBINOPC		Virtual route inoperative codes.
	X'07'	ER inoperative.
	X'08'	DACTVR

VIRTUAL ROUTE STATUS TABLE VST

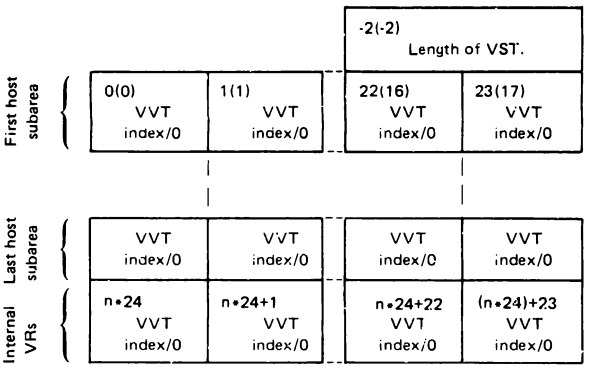
Program: NCP

Size in bytes: Two-byte prefix plus 24 bytes times the value of the NUMHSAS operand in the BUILD macro plus 24 bytes for internal VRs.

Created by: NCP generation.

Pointed to by: CXTVST in the link-edit map and the SYSVSTP field in HWX + 36(24).

Function: The VST is indexed by the VRN, TPF and VIT entry. Each VST entry either indexes the VVT and thereby a VRB or is equal to zero. The index must be multiplied by 4 to index the VVT.



n = NUMHSAS value

VECTOR TABLE OF SNPs — VTS

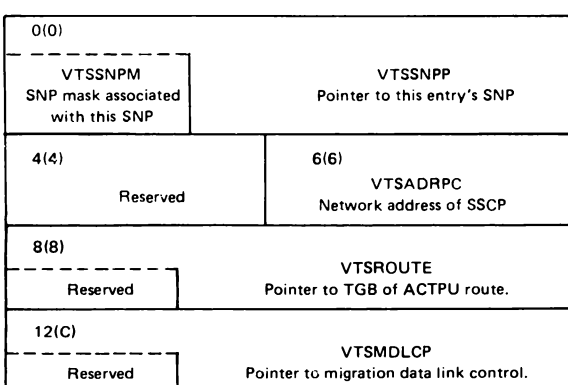
Program: NCP

Size in bytes: 16(10) each entry. Number of entries is located in PSB (PSBVTC).

Created by: NCP generation. One entry for each allowable concurrent session.

Pointer to: PSBVTP field in PSB, SNPVTSP field in SNP.

Function: Contains session-related information to control SSCP-NCP sessions.



VIRTUAL ROUTE VECTOR TABLE VVT

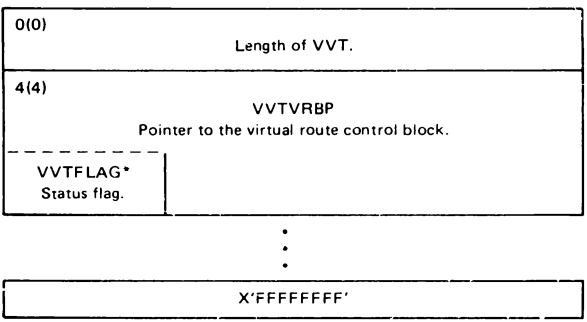
Program: NCP

Size in bytes: Eight bytes plus four times the VRPOOL operand value plus three. VRPOOL is in the BUILD macro.

Created by: NCP generation.

Pointed to by: CXTVVT in the link-edit map and the SYSVVTP field in HWX + 40(28).

Function: Each four-byte entry contains the address of a virtual route control block (VRB) and a flag giving the status of the VRB. The first and last entries are invalid.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
4(4) VVTFLAG		Status flag.
	x. . .	1=VRB assigned. 0=VRB available.

WRAP CONTROL BLOCK

WCB
(EP,PEP)

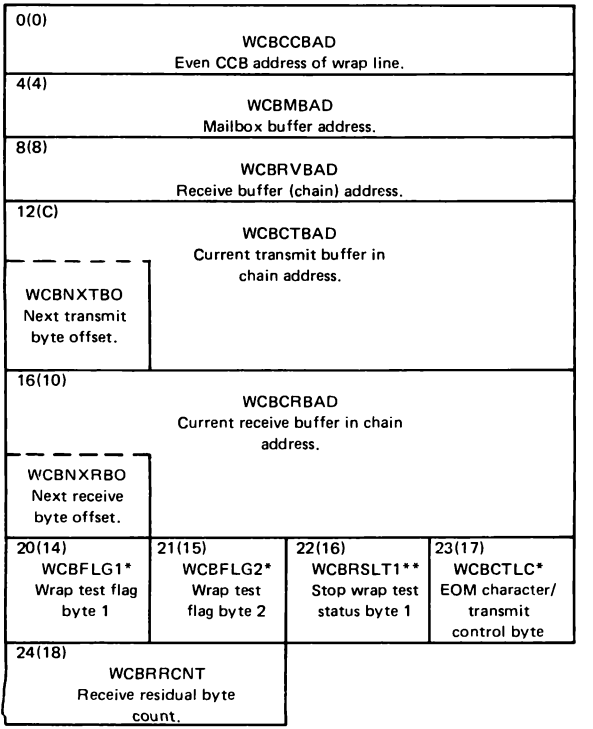
Program: EP, PEP

Size in bytes: 26(1A)

Created by: CYKMOS assembly

Located in: CYKMOS module (label CYKWCB)

Function: Used to control a wrap test.



*Indicates that a byte expansion follows.

**Refer to the MBFRSLT1 field of the MBF control block for a byte expansion of this field.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
16(10) WCBFLG1		Wrap Test flag byte 1
	xx.	Wrap test state 00--Wrap not initialized 01—Wrap initialized 10—Line being initialized 11—Wrap test started
	..1	ACU interface remembrance
	...1	Stop wrap test pending
17(11) WBCFLG2		Wrap test flag byte 2
	1.	Transmit test pattern completed
	.1	Receive test pattern completed
	..1	Transmit extended status stored
	...1	Receive extended status stored
	. . . . 1. . .	Timeout occurred during the transmission/reception
23(17) WCBCTLC		
	0000 000x	Turn line around and monitor.
	0000 011x	Send ENQ, turn line around, and receive response. (See note.)
	0000 110x	Send ACK-0, turn line around, and receive.
	0000 111x	Send NAK, turn line around, and receive.
	0001 101x	Send RVI, turn line around, and receive.
	0001 110x	Send ACK-1, turn line around, and receive.
	0001 111x	Send WACK, turn line around, and receive.
	0010 011x	Send STX-ENQ (TTD), turn line around, and receive.
	0011 001x	Send STX-data-ETX, turn line around, and receive.
	0011 010x	Send STX-data-ETB, turn line around, and receive.

Note: ENQ may be in a data stream of leading graphics. When a Receive or Receive Monitor command is issued with polling or selection, it may be necessary to send EOT and put the line in control mode before sending *the polling or selection* characters. In this case, bits 0-2 must be 100 instead of 000. This tells the scanner to send EOT before doing anything else.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
23(17) WCBCTLC (continued)	0100 011x	Send DLE-STX-data-DLE-ENQ, turn around, and receive.
	0100 100x	Send DLE-STX-data-DLE-ITB.
	0101 001x	Send DLE-STX-data-DLE, ETX, turn around and receive.
	0101 010x	Send DLE-STX-data-DLE-ETB, turn around, and receive.
	0110 011x	Send SOH-data-ENQ, turn line around and receive.
	0111 001x	Send SOH-data-ETX, turn line around and receive.
	0111 010x	Send SOH-data-ETB, turn line around, and receive.
	1000 000x	Send EOT, turn line around, and monitor.
	1001 100x	Send EOT, turn line around, and cause L2 interrupt.
	1001 100x	Send DLE-EOT, turn line around, and cause L2 interrupt.
	xxxx xxx0	No leading graphics.
	xxxx xxx1	Leading graphics.

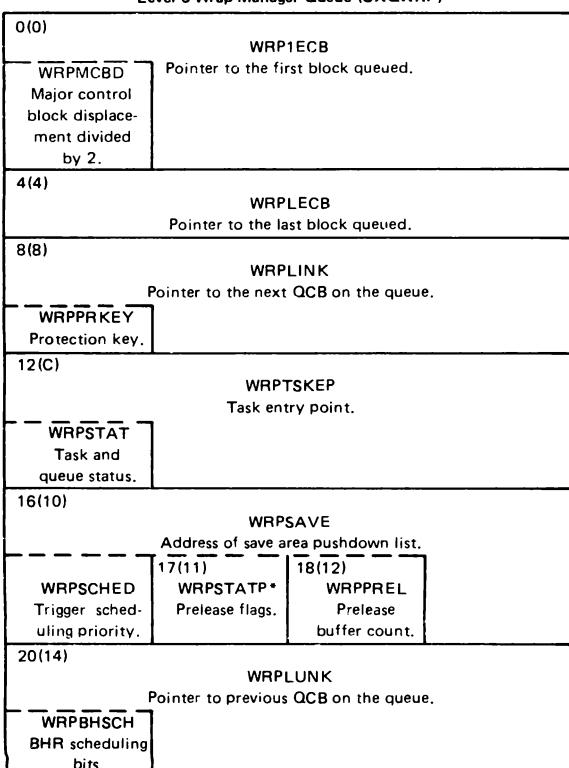
Program: NCP

Size in bytes: 48(30)

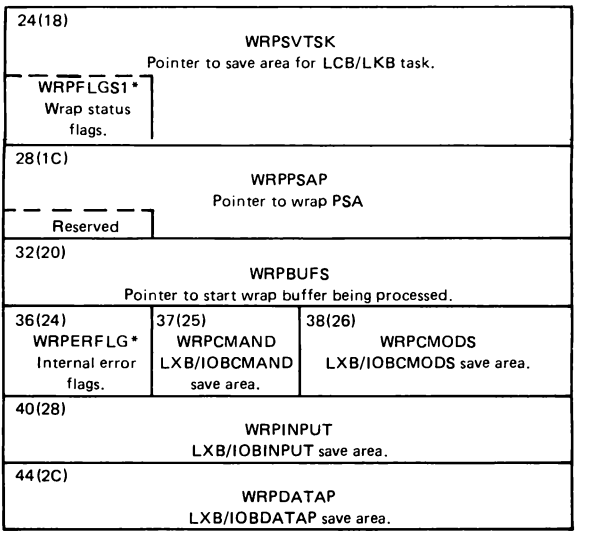
Pointer to WRP: MIFWRPP field at X'C' in MIF.

Function: Contains a QCB and other information used by the wrap manager.

Level 5 Wrap Manager Queue (CXQWRP)



*Indicates a byte expansion follows.



*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
17(11) WRPSTATP		Prelease flags.
	1...	Preleased triggered.
	.1..	Type Prelease = slowdown.
	..1.	Type Prelease = CWALL.
24(18) WRPFLGS1		Wrap status flags.
	1...	Wrap initialized (command accepted).
	.1..	Wrap started.
	..1.	Wrap stopped.
36(24) WRPERFLG		Internal error flags.
	1...	Invalid command.
	.1..	Invalid sequence.

WU TRANSLATE TABLE

WU XLATE TABLE (EP,PEP)

Program: EP, PEP

Size in bytes: 64(40)

Located in: Module CYASL, CYATST/CYESL, CYETST

Created by: NCP or EP generation.

Referenced by: Data service routines (for start-stop terminals only).

Function: Assists in translating WU code.

0(0)–63(3F)
CYAXTABL Translation data.

WORD DIRECT ADDRESSABLE STORAGE XDA

Program: NCP

Size in bytes: 128(80)

Located in: Controller storage beginning at location X'0780'.

Created by: NCP generation.

Pointer to XDA: None. Fixed location.

Function: Contains frequently accessed system control fields.

Note: This displacements given are the absolute storage locations in hex.

Index

Name	Offset	Name	Offset	Name	Offset
CCPQOFF	0780	SYSHWE	07D8	SYSW5	07D4
CCPQON	0784	SYSHWX	07DC	SYSW6	07D8
EACB	07B0	SYSL1B	07C0	SYSW7	07DC
EPSA	078C	SYSL1BP	07C0	SYSW8	07E0
EPTRC	0790	SYSL4B	079C	SYSW9	07E4
FPSA	0788	SYSL4BP	079C	SYSW10	07E8
QOFF	0780	SYSMBIN	0794	SYSW11	07EC
QON	0784	SYSMBOUT	0798	SYSW12	07F0
RTRL2GOI	07E4	SYSMB1	0794	SYSW13	07F4
RTRSVLAR	07A8	SYSMB2	0798	SYSW14	07F8
RTRW8	07A8	SYSMIF	07B8	SYSW15	07FC
SUT	07AC	SYSMIFP	07B8	TIMCTBAD	07B4
SYSALTSV	07FC	SYSPMFMP	07F8	TIMH2	07A0
SYSBP1FB	07C4	SYSRVTAD	07E8	TIMH3	07A4
SYSBP2FB	07F0	SYSSUT	07AC	TIMH9	07B4
SYSBST	07F4	SYSTMQC	07C8	TIMWKTAB	07AC
SYSBUFPL	07D4	SYSTMQN	07CC	TIMWKTNX	07A4
SYSCPIT	07BC	SYSW1	07C4	UTILSTSZ	07E0
SYSCPITP	07BC	SYSW2	07C8	XDAEPSA	078C
SYSEACB	07B0	SYSW3	07CC	XDAEPTRC	0790
SYSEBPL	07D0	SYSW4	07D0	XDAFPSA	0788

Level 2 Passes line I/O Processing That Can Be Delayed To Level 3 By Placing The ACB s At The Tail End Of The CICP Queue.

'0780'	QOFF (CCPQOFF) CICP queue head.
'0784'	QON (CCPQON) CICP queue tail.
'0788'	FPSA (XDAFPSA) Floating PSA for wrap.

'078C'	EPSA (XDAEPSA) Error PSA.
'0790'	EPTRC (XDAEPTRC) EP trace save area.
'0794'	SYSMB1 (SYSMBIN) Pointer to In Mailbox.
'079B'	SYSMB2 (SYSMBOUT) Pointer to Out Mailbox.
'079C'	SYSL4B (SYSL4BP) Pointer to level 4 router control block (L4B).
'07A0'	TIMH2 (TIMWKTAB) Current line timer control/work table.
'07A4'	TIMH3 (TIMWKTNX) Pointer to next low-resolution subtable to be served.
'07A8'	RTRW8 (RTRSVLAR) Save area for lagging address register (LAR).
'07AC'	SUT (SYSSUT) Pointer to start of the communication line timer and RAS
'07B0'	EACB (SYSEACB) Pointer to the dummy ACB.
'07B4'	TIMH9 (TIMCTBAD) Pointer to the start of the hi-resolution timer queue.
'07B8'	SYSMIF (SYSMIFP) Pointer to the MOSS interface control block (MIF).

'07BC'
SYSCPIT (SYSCPITP) Pointer to control program information table (CPIT).
'07C0'
SYSL1B (SYSL1BP) Pointer to the level 1 control block (L1B).

Supervisor Subcontrol Block (XDASYS)

'07C4'
SYSW1 (SYSBP1FB) Pointer to first free buffer.
'07C8'
SYSW2 (SYSTMQC) Pointer to current time period's time-queue QCB.
'07CC'
SYSW3 (SYSTMQN) Pointer to next time period's time-queue QCB.
'07D0'
SYSW4 (SYSEBPL) Remembrance of the last buffer in buffer pool.
'07D4'
SYSW5 (SYSBUFPL) Remembrance of the first buffer in buffer pool.
'07D8'
SYSW6 (SYSHWE) Pointer to HWE.
'07DC'
SYSW7 (SYSHWX) Pointer to HWX
'07E0'
SYSW8 (UTILSTSZ) Address of last byte of storage.

'07E4'
SYSW9 (RTRL2GOI) Level 2 interrupted IAR.
'07E8'
SYSW10 (SYSRVTAD) Pointer to resource vector table minus 2.
'07EC'
SYSW11 Pointer to maintenance history area.
'07F0'
SYSW12 (SYSBP2FB) Pointer to logical end of system free buffer pool.
'07F4'
SYSW13 (SYSBST) Pointer to BH set table.
'07F8'
SYSW14 (SYSPMFMP) Pointer to performance maintenance facility (PMF) control block
'07FC'
SYSW15 (SYSALTSV) Pointer to level 5 alternate save area.

BYTE DIRECT ADDRESSABLE STORAGE XDB

Program: NCP

Size in bytes: 128(80)

Located in: Controller storage beginning at location '0680'.

Created by: NCP generation.

Pointer to XDB: None. Fixed location.

Function: Contains frequently accessed system control fields.

Note: The displacements given are absolute storage locations.

Index

Name	Offset	Name	Offset	Name	Offset
RTRB1	06A6	SYSB3D	06BD	SYSMOSS1	06BC
RTRB2	06A7	SYSB4	0688	SYSMOSS2	06BD
RTRB3	06A8	SYSB5	0689	SYSNSBMF	0694
RTRB5	06AA	SYSB6	068A	SYSPRELC	0683
RTRB12	06B1	SYSB7	068B	SYSSMI	0689
RTRB13	06B2	SYSB8	068C	SYSSUBMF	0693
RTRB17	06B6	SYSB9	068D	TIMBA	06A5
RTRB18	06B7	SYSB10	068E	TIMB1	069C
RTRB19	06B8	SYSB11	068F	TIMB2	069D
RTRB20	06B9	SYSB12	0697	TIMB3	069E
RTRB21	06BA	SYSB13	0698	TIMB4	069F
RTRFEESC	06B6	SYSB14	0699	TIMB5	06A0
RTRINLVL	06A8	SYSB15	069A	TIMB6	06A1
RTRL5KEY	06AA	SYSB17	0690	TIMB7	06A2
RTRSPUR	06A6	SYSB18	0691	TIMB8	06A3
RTRSPUR1	06A7	SYSB19	0692	TIMB9	06A4
RTRSPUR2	06B7	SYSB20	0693	TIMB11	0695
RTRSPUR4	06B8	SYSB21	0694	TIMB12	0696
RTR1PUR	06B2	SYSCAR1	0682	TIMDIAL	06A3
RTR2PUR	06B9	SYSCAR2	069B	TIMDIDLY	06A4
RTR3PUR	06B1	SYSCATPC	0699	TIMDSABL	06A1
RTR4PUR	06BA	SYSCATPS	069A	TIMENABL	06A2
SYSAVEK	068C	SYSDRTE	0681	TIMEOTXT	0696
SYSBFS	0686	SYSDSGC	068E	TIMEZERO	0695
SYSBFSZC	068F	SYSDSPM	0684	TIMLNCNT	069F
SYSBFSZD	0687	SYSFLG0	068A	TIMRSRES	06A0
SYSBLKSZ	0691	SYSFLG1	068B	TIMSICNT	069D
SYSBPSTS	0689	SYSFLG2	0692	TIMSWBID	06A5
SYSBUFSZ	0690	SYSFLG3	068D	TIMTICNT	069C
SYSB1	0685	SYSIBC	0688	TIMWKREG	069E
SYSB2	0686	SYSIPLCA	0697		
SYSB3	0687	SYSL13CA	0698		
SYSB3C	06BC	SYSMASK	0685		

'0680' Reserved	'0681' SYSDRTE MOSS display rate refresh.	'0682' SYSCAR1* Conditional assembly removal flags 1

Supervisor Control Block (XDBSYS)

			'0683' SYSPRELC System prelease count.
'0684' SYSDSPM* System dispatch mask.	'0685' SYSB1* (SYSMASK) Control byte for dispatcher flags.	'0686' SYSB2 (SYSBFS) Offset to last byte of buffer.	'0687' SYSB3 (SYSBFSZD) Buffer size minus buffer prefix size.
'0688' SYSB4 (SYSIBC) Buffer size minus (buffer prefix+1); used as initial count by communication lines.	'0689' SYSB5* (SYSSMI) (SYSBPSTS) Buffer pool and network status.	'068A' SYSB6* (SYSFLG0) General communication byte.	'068B' SYSB7* (SYSFLG1) Field used by dump to determine storage load.
'068C' SYSB8 (SYSAVEK) Number of save areas contained in buffer.	'068D' SYSB9* (SYSFLG3) General communication byte.	'068E' SYSB10 (SYSDSGC) CA data service governor count.	'068F' SYSB11 (SYSBFSZC) Buffer size minus (buffer prefix -1)
'0690' SYSB17 (SYSBUFSZ) True buffer size.	'0691' SYSB18 (SYSBLKSZ) Maximum number of buffers in BCU.	'0692' SYSB19* (SYSFLG2) General communication byte.	'0693' SYSB20 (SYSSUBMF) DAF/OAF Subarea mask (SDLC)
'0694' SYSB21 (SYSNSBMF) DAF/OAF not subarea mask (SDLC)	'0695' TIMB11 (TIMEZERO) Zero-second communications error time-out request.	'0696' TIMB12 (TIMEOTXT) User-specified shoulder tap or default to RAS time-out for text time-out overrride.	'0697' SYSB12 (SYSIPLCA) EP/3725 IPL channel adapter.

*Indicates a byte expansion follows.

'0698'	'0699'	'069A'	'069B'
SYSB13* (SYSL13CA) Level 1 or 3 CA ERP.	SYSB14 (SYSCATPC) Prelease count for present active task.	SYSB15* (SYSCATPS) Prelease status for present active task.	SYSCAR2* Conditional assembly removal flags 2.

Timer Subcontrol Block (XDBTIM)

'069C'	'069D'	'069E'	'069F'
TIMB1 (TIMTICNT) Count remembrance field.	TIMB2 (TIMSICNT) Count remembrance field for system timer.	TIMB3 (TIMWKREG) Work register for communication line timer service routine (CXCCLINT).	TIMB4 (TIMLNCNT) Number of lines to be served before checking for higher priority work.
'06A0'	'06A1'	'06A2'	'06A3'
TIMB5 (TIMRSRES) Work register for RAS line timer.	TIMB6 (TIMDSABL) Communications timer time-out to protect against failure to disconnect.	TIMB7 (TIMENABL) Communications timer time-out to protect against failure to connect.	TIMB8 (TIMDIAL) Communications timer time-out to protect against dial failure.
'06A4'	'06A5'		
TIMB9 (TIMDIDLY) Communications timer time-out to protect against delay in dial tone.	TIMBA (TIMSWBID) Communications timer time-out to protect against switched line hang-up.		

Routine Subcontrol Block (XDBRTR)

'06A6'	'06A7'
RTRB1 (RTRSPUR) Retry counter for program level 3 unresolved interrupts.	RTRB2 (RTRSPUR1) Retry counter for program level 1 unresolved interrupts.

*Indicates a byte expansion follows.

'06A8' RTRB3* (RTRINLVL) Save area for branch-to-zero detector. Will be zeros if levels 2 through 5 branched to location '0000'.	'06A9' Reserved	'06AA' RTRB5 (RTRL5KEY) Level 5 protect key at time of protection exception.	'06AB' Reserved
'06AC' Reserved			
	'06B1' RTRB12 (RTR3PUR) Reinitialize program level 3 unresolved-interrupt counter.	'06B2' RTRB13 (RTR1PUR) Reinitialize program level 1 unresolved-interrupt counter.	
Reserved		'06B6' RTRB17* (RTRFEESC) Field engineering hook/escape byte.	'06B7' RTRB18 (RTRSPUR2) Retry counter for program level 2 unresolved interrupts.
'06B8' RTRB19 (RTRSPUR4) Retry counter for program level 4 unresolved interrupts.	'06B9' RTRB20 (RTR2PUR) Reinitialize program level 2 retry counter.	'06BA' RTRB21 (RTR4PUR) Reinitialize program level 4 retry counter.	'06BB' Reserved
'06BC' SYSB3C* (SYSMOSS1) MOSS level 1 request.	'06BD' SYSB3D* (SYSMOSS2) MOSS status and L3/L4 requests.	'06BE' thru '06FF' Reserved	

*Indicates a byte expansion follows.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
'0682' SYSCAR1		Conditional assembly removal flags 1.
	1.	More than one CA on NCP generation.
	.1	Link automatic time-out.
	..1	Address trace
	...1	SDLC
	. . . . 1. . .	Programmed resource in system.
	. . . . .1. .	CA trace.
	. . . . . .1 .	Channel delay.
	1	Channel time-out.
'0684' SYSDSPM		System Dispatch Mask.
	000.	System in normal state.
	010.	System in pseudo slowdown.
	110.	System in CWALL state.
'0685' SYSB1 (SYSMASK)		Control byte for dispatcher flags.
	1.	Appendage task in progress.
	.1	System task is active.
	..1	Level 3 disabled.
	...1	Level 3 active.
	. . . . 1. . .	BHRs in execution.
	. . . . .1 . .	Dispatcher service required in level 3.
	. . . . . .1 .	Level 4 disabled.
'0689' SYSB5 (SYSSMI) (SYSBPSTS)		Buffer pool and network status.
	1.	System in slowdown.
	.1	Deactivate Invite command has been processed, do not poll during service seeking.
	..1	No currently enabled channel adapters, or Global accept SIM.
	...1	SDLC RR/RNR polling control during slowdown.
	. . . . 1. . .	Quiesce message required.
	. . . . .1 . .	Channel CWAR invalidated because buffer pool depleted, or EP only—buffer is depleted.
	. . . . . .1 .	Level 4 waiting for a buffer.
	x	1=Loaded over a channel. 0=Loaded over a link.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
'068A' SYSB6 (SYSFLG0)		General communication byte.
	1.	Selective system reset.
	.1	Checkpoint option selected.
	. .x	Reserved.
	. . .0	System > 64K.
	. . . . 1. . .	Return data to host on error.
	. . . . .1 . .	Critical situation notification option selected.
	. . . . . .1 .	Online test option selected.
	x	Reserved.
'068B' SYSB7 (SYSFLG1)		Field used by dump to determine storage load and by MOSS processing.
	X'F1'	NCP
	X'F7'	NCP link attached.
	X'FA'	EP
	X'FB'	PEP
		(To determine version and release level, see XDHNCP and XDHEP.)
'068D' SYSB9 (SYSFLG3)		General communication byte.
	1.	PU type 1 code in system.
	.1	SDLC 3270 Model 11/12 support included in system.
	. .1	Dynamic reconfiguration support included in system.
	. . . . 1. . .	SDLC monitor mode function is included.
	. . . . .1 . .	NPA data collection active.
	. . . . . .1 .	MOSS-to-EP communication queue needs service.
	1	CRP entries ready for MOSS.
'0692' SYSB19 (SYSFLG2)		General communication byte.
	x.	Reserved
	.x	Console support 1=NCP 0=EP
	. .1	PEP line switch in system.
		(Bits 3 through 7 reserved.)

Offset/Field Name	Bit Pattern/ Hex Value	Contents
'0698' SYSB13 (SYSL13A)		Level 1 or 3 CA ERP
	1.	CA in ERP mode.
'069A' SYSB15 (SYSCATPS)		Prelease status for present active task.
	.1	Prelease type=Slowdown
	..1	Prelease type=CWALL
'069B' SYSB16 (SYSCAR2)		Conditional assembly removal flags 2.
	1.	Block handling routines (BHRs) included during NCP generation.
	.1	Only one CA is active in the system.
'06A8) RTRB3 (RTRINLVL)		Program level interrupted by level 1.
	1.	Program level 2 interruted.
	.1	Program level 3 interrupted.
	..1	Program level 4 interrrupted.
	...1	Program level 5 interrupted.
'06B6' RTRB17 (RTRFEESC)		Field engineering hook/escape byte.
	1.	Allow additional register range (AARR)
	.x	1=Dump 0=No dump
	. .x	1=No dispatch trace. 0=Dispatch trace is active.
	...1	Dispatch trace control bit (allows calls and subtasks to be traced).
	. . . . 1. . .	SVC trace active.
'06BC' SYSB3C (SYSMOSS1)		Moss level 1 request.
	1.	Request is MOSS down. (Bits 1 through 7 reserved).
'06BD' SYSB3D (SYSMOSS2)		MOSS status and level 3 or level 4 requests.
	1.	MOSS is down.
	.1	MOSS is offline.
	. .xx	Reserved.
	. . . . 1. . .	Request is MOSS offline.
	. . . . .1 . .	Request is MOSS down. (level 3, time-out).
	. . . . . .1 .	Request is MOSS-down (level 4, in-mailbox error).
	1	Request is MOSS down (level 4, out-mailbox error).

HALFWORD DIRECT ADDRESSABLE STORAGE XDH

Program: NCP, EP

Located in: Controller storage beginning at location X'0700'.

Size in bytes: 128(80)

Created by: NCP generation.

Pointer to XDH: None. Fixed location.

Function: Contains frequently accessed system control fields.

Note: The displacements given are absolute storage locations in hex.

Index

Name	Offset	Name	Offset	Name	Offset
CCPH1	0774	SNS2	0734	TIMH6	073A
CCPSAVE	0774	SYSBINTM	0762	TIMTENTH	073A
CHANSNS1	0732	SYSBPCBC	0754	TMRF	0700
CHANSNS2	0734	SYSBPGCC	0752	XDHCCP	0774
CHSVBKSZ	0770	SYSBPCW	0750	XDHCHSV	0770
CHSVH1	0770	SYSBPTBC	0756	XDHCSPQ	072C
CYATMPTR	0700	SYSCUREQ	0766	XDHEP	0749
CYEHUNG	0726	SYSHW71A	071A	XDHEPCH1	0708
CYEPSCA	071A	SYSHW726	0726	XDHEPCH2	070A
DCTABND	0760	SYSH1	0754	XDHEPCH3	070C
DCTSAVEK	075E	SYSH2	0756	XDHEPCH4	070E
EPCH1	0708	SYSH5	0758	XDHEPCH5	0710
EPCH2	070A	SYSH12	075E	XDHEPCH6	0712
EPCH3	070C	SYSH13	0760	XDHNCP	0745
EPCH4	070E	SYSH14	0762	XDHROS	0700
EPCH5	0710	SYSH15	0764	XDHRTR	0776
EPCH6	0712	SYSH16	0766	XDHSYS	0744
EPLVL	0749	SYSH17	0768	XDHTET	0706
NCPLVL	0745	SYSH20	0750	XDHTIM	073A
RTRBARSV	0776	SYSH21	0752		
RTRCASEL	077E	SYSLINES	0758		
RTRH1	0776	SYSSAVEK	075E		
RTRH4	0704	SYS1H18	076A		
RTRH10	077E	SYS2H18	076B		
SNS1	0732	TET	0706		

'0700' TMRF (CYATMPTR) (EP) CHVT save for timer.	'0702' Reserved
'0704' RTRH4 Save area for CA level 1.	'0706' TET (XDHTET) Pointer to timer extension table (EP).

Pointers to the EP channel control blocks (XDHEPCH)

'0708' EPCH1 (XDHEPCH1) Pointer to EP CHCB for CA#1.	'070A' EPCH2 (XDHEPCH2) Pointer to EP CHCB for CA#2.
'070C' EPCH3 (XDHEPCH3) Pointer to EP CHCB for CA#3.	'070E' EPCH4 (XDHEPCH4) Pointer to EP CHCB for CA#4.
'0710' EPCH5 (XDHEPCH5) Pointer to EP CHCB for CA#5.	'0712' EPCH6 (XDHEPCH6) Pointer to EP CHCB for CA#6.
'0714' Reserved	'0716' Reserved
'0718' Reserved	'071A' SYSHW71A (CYEPSCA) (EP) Panel selected CHCB.
'071C' Reserved	'071E' Reserved
'0720' Reserved	'0722' Reserved
'0724' Reserved	'0726' SYSHW726 (CYEHUNG) (EP) Unhanged indicator.
'0728' Reserved	'072A' Reserved
'072C' Reserved	'072E' Reserved
'0730' Reserved	'0732' SNS1 (CHANSNS1) Channel sense I/O data.
'0734' SNS2 (CHANSNS2) Channel sense I/O data.	'0736' Reserved
'0738' Reserved	

Timer Subcontrol Block (XDHTIM)

	'073A' TIMH6 (TIMTENTH) Tenths of a second counter.
'073C' Reserved	'073E' Reserved
'0740' Reserved	'0742' Reserved

Supervisor Subcontrol Block (XDHSYS)

'0744' Reserved	'0745' NCPLVL (XDHNCP) NCP version and release level.
'0748' Reserved	'0749' EPLVL (XDHEP) EP version and release level.
'074C' Reserved	'074E' Reserved
'0750' SYSH20 (SYSBPCW) CWALL entry threshold.	'0752' SYSH21 (SYSBPGCC) Global committed buffers count.
'0754' SYSH1 (SYSBPCBC) Current free buffer count.	'0756' SYSH2 (SYSBPTBC)* Free buffer threshold count +1. For EP only—buffers replenished threshold.
'0758' SYSH5 (SYSLINES) Number of communications lines.	'075A' Reserved
'075C' Reserved	'075E' SYSH12 (DCTSAVEK) (SYSSAVEK) System save area buffer pool allocation count.
'0760' SYSH13 (DCTABND) (SYSABND) System abend code.	'0762' SYSH14 (SYSBINTM) System binary time in seconds. (time from NCP load)

*Indicates a byte expansion follows.

'0764' SYSH15 Second halfword of system binary time.	'0766' SYSH16 (SYSCUREQ) Time value for earliest expiring current system timer request.
'0768' SYSH17 Second halfword of SYSCUREQ	'076A' Reserved
'076C' Reserved	'076E' Reserved

Channel Adapter Interrupt Handler Save Area (XDHCHSV)

'0770' CHSVH1 (CHSVBKSZ) Maximum byte count to host per host start I/O.	'0772' Reserved

Communicaion Control Program Save Area (XDHCCP)

'0774' CCPH1 (CCPSAVE) Save area for program level 3 CCP.

Program Level 1/3 Router Subcontrol Block (XDHRTR)

	'0776' RTRH1 (RTRBARSV) Save area for scanner buffer address register.
'0778' Reserved	'077A' Reserved
'077C' Reserved	'077E' RTRH10 (RTRCASEL) Save area for CA selection mask.

Byte Expansions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
X'0756' SYSH2 (SYSBPTBC)		User requested slowdown threshold.
	0001*	50%
	0002*	25%
	0003*	12%

*After NCP initialization this field contains the actual calculated number of buffers for the threshold.

EXCHANGE IDENTIFICATION DATA BLOCK XID

Program: NCP

Size in bytes: 31(1F) plus 13(D) for an SDLC link DLC extension or 11 (B) for a channel DLC extension.

Created by: NCP generation.

Pointer to XID: CXTXID entry in the link-edit map.

Function: Contains PU identification — related parameters passes between adjacent subarea nodes.

0(0) XIDFTYP* XID format/PU type field.	1(1) XIDFLDLN XID field length.	2(2) XIDBLKID Block number. (bits 0-11)	
4(4) XIDBLKID (Cont.) Specific ID (bits 12-31)		6(6) Reserved	
8(8) XIDTFLGS* Transmission group active or inactive flags.	9(9) XIDFIDTY* FID Type Supported.	10(A) Reserved	11(B) XIDMXPIU Maximum PIU size supported.
12(C) (Cont.) XIDMXPIU Maximum PIU size supported.	13(D) XIDTGN Transmission group number.	14(E) Reserved	
16(10) Reserved	17(11) XIDSUBA PU subarea.	18(12) XIDEFLGS* Error flags.	19(13) XIDIPLDP* IPL/DUMP information byte.
20(14) XIDLMOD Load module name.			
28(1C) Reserved		30(1E) XIDDLCTY* DLC type.	

*Indicates a byte expansion follows.

The following SDLC Link and Channel DLC extensions both contain DLC parameters that are included as the DLC portion of XID format 2. The parameters are defined for SDLC if the DLC type = X'01' (at 30(1E)) or for channels if the DLC type = X'02'.

SDLC Link DLC Extension

		31(1F) XIDCFLGS* Configuration flags.
32(20) XIDMXDLC* Maximum length of DLC field to be recieved.	34(22) XIDCMPRO SDLC command profile.	35(23) XIDFNFGS* SDLC function flags.
36(24) Reserved	38(26) XIDMODMX modulus and maxout count.	39(27)
40(28) Reserved		

Channel DLC Extension

			31(1F) XIDIBFRS Buffer lease count.
32(20) XIDMXBFR Number of SSCP Read CCWs.		34(22) XIDUNTSZ SSCP buffer unit size.	
36(24) XIDBFPAD SSCP pad character count.	37(25) XIDFLAGS* Channel DLC flags.	38(26) XIDATDLY CABATD7I Attention delay interval.	
40(28) XIDATTMO CABATO7I Attention timeout interval.			

*Indicates a byte expansion follows.

Byte Extensions

Offset/Field Name	Bit Pattern/ Hex Value	Contents
0(0) XIDFTYP		XID format.
	0000	Fixed format.
	0001	SDLC variable format.
	0010	PU ID with DLC parameter options.
		PU type
	 0001	PU.T1
	 0010	PU.T2
	 0100	PU.T4
	 0101	PU.T5
8(8) XIDTFLGS		Transmission group (TG) status.
	1...	TG active.
	.1..	Multilink TG supported.
		Type segment assembler supported.
	..00	ASSEMBLER.NONE (pass through
	..01	ASSEMBLER.STA; ASSEMBLER.BR.STA
	..10	ASSEMBLER.SESS; ASSEMBLER.BF.SESS
	..11	ASSEMBLER.11 (only BBIU, EBIU supported)
9(9) XIDFIDTY		FID type supported.
	1...	FID0
	.1..	FID1
	.... 1...	FID4
18(12) XIDEFLGS		Error flags.
	.1..	Received XID unacceptable.
	..1.	Incompatible DLC type currently connected to a resolved TG.
	...1	Resolved TG undefined.
	.... 0...	NCP always sets to 0.

Offset/Field Name	Bit Pattern/ Hex Value	Contents
19(13) XIDIPLDP		IPL or DUMP information byte.
	X'00'	A CONTACT has been received and no IPL or DUMP information will be included in the XID.
	X'07'	Already loaded.
	X'08'	Receiver does not support byte 19(13).
30(1E) XIDDLCTY		DLC type.
	X'00'	No DLC parameters follow.
	X'01'	SDLC parameters follow.
	X'02'	Channel parameters follow.
31(1F) XIDCFLGS		Configuration flags.
	0001	Sender can be primary.
	0010	Sender can be secondary.
	0100	Sender can be combined.
	0011	Sender can be primary or secondary.
	0101	Sender can be primary or combined.
	0110	Sender can be secondary or combined.
	0111	Sender can be primary, secondary, or combined.
	.... 00..	Nonswitched.
	.... 01..	Slow connect.
	.... 10..	Fast connect.
	00	Sender is TWA (two way alternate).
	01	Sender is TWS (two way simultaneous).
32(20) XIDMXDLC		Maximum length of DLC field to be received.
	Byte 0 0xxx xxxx Byte 1 xxxx xxxx	

Offset/Field Name	Bit Pattern/ Hex Value	Contents
35(23) XIDFNFGS		SDLC function flags.
	..00	SIM and RIM not supported.
	..01	Will receive SIM and send RIM.
	..10	Will send SIM and receive RIM.
	..11	Capability exists to send and receive both SIM and RIM.
37(25) XIFFLAGS		Channel DLC flags.
	1...	Using status modifier option.
	..1.	Override existing channel to transmission group connection.

Section 3. BTU Commands and Modifiers

Following is a list of the BTU commands with a brief description of each modifier and the hex value.

Control Command (X'08')

Command	Modifier (Hex)	Meaning
Display Line Status	01	Displays current status of the line.
Replace Session Initiation Information for a Line	02	Replaces LCB information associated with the initiation.
Copy Session Initiation Information	05	Accesses information associated with the initiation of a session.
Change Modem Speed	12	Allows the user to change the speed at which the appropriate modems operate a line.
LPDA Test Interrupt	14	Starts the Link Problem Determination Aid (LPDA) test when the line goes from busy to idle (Command is internal to NCP.)
Copy Destination Mode	18	Accesses the mode information of a device from the DVB.
Physical Disconnect	1C	Breaks the physical dial connection.
Copy Device Session Information	21	Accesses the device's polling character, addressing characters, and if the device is switched call-out, the dial digits.
Replace Device Session Information	22	Replaces the device's polling characters and addressing characters in the DVB. If the device is switched call-out, it replaces the dial digits in the COE.
Set Session Address	23	Transfers the use of a BSC/SS device to another SSCP.
Reset Error Lock	41	Clears the error lock condition on a device. The first request on the device work queue is honored at the completion of this command.

Command	Modifier (Hex)	Meaning
Reset Device Queues	42	Returns all commands for a device that were accepted but not yet honored. The response BTU of the returned commands indicates that they were reset.
Request Control Mode Reset	43	Sends RVI on BSC lines.
Reset Immediate	44	Ends the current operation on a device without regard to data loss.
Reset Online Terminal Test*	48	Aborts the execution of the chain of online terminal tests, tests diagnostic mode, and clears the device queues.
Switch to Backup	4A	Requests switched line backup.
Switch from Backup to Primary	4C	Requests that the primary line be activated.
Reset Conditional	50	Tests the status of the top command for the device. If data transfer has not started, the reset takes place immediately. If data transfer has started, the reset is not done.
Reset at End of Command	60	Ensures that the device input queue and device work queue are idle and empty so a new sequence of operations can begin.
Modify Block Handler Set Association	8D	Activates, deactivates, and/or changes the association of a block handler set with a device.
Set Destination Mode	9A	Replaces the device mode flags for a particular device.
Override Session Address	E3	Reestablishes contact with the owning SSCP.

*Sent in the request unit of a FID1 execute test request.

Disconnect Command (X'07')

Command		Modifier (Hex)	Meaning
Disconnect Normal	D	00	No modifier.
Disconnect with Invite	Di	01	Executed as a Disconnect Normal command followed by an Invite Normal command.

Command		Modifier (Hex)	Meaning
Disconnect with End of Call	De	02	For switched lines, this modifier results in the physical connection between the terminal and the communications controller being broken. For all other lines, this modifier is the same as normal.
Disconnect with EOC and Invite	Dei	03	Executed as a Disconnect with End of Call followed by an Invite command.

Contact Command (X'06')

Command	Modifier (Hex)	Meaning
Contact Normal	00	Contact normal.
Contact with Return Resource ID	01	Returns resource ID of line used to establish the dial connection.

Invite Command (X'05')

Command		Modifier (Hex)	Meaning
Invite Normal	I	00	Unit of data for this command is that specified by the TERMINAL macro at NCP generation.
Invite Block	Ib	01	Unit of data for this command is the block (ends with EOB).
Invite Message	Im	02	Unit of data for this command is the message (ends with ETX [BSC] or EOT [SS]).
Invite Transmission	It	03	Unit of data for this command is the transmission (ends with EOT).
Invite Transmission with Disconnect	Id	04	Executed as an Invite Transmission command followed by a Disconnect command.
Invite with Auto Restart	Ia	05	Executed as unbounded series of Invite with Disconnect commands. This command must be terminated with a reset request.

Command		Modifier (Hex)	Meaning
Invite Perpetual (valid only for clusters)	Ip	06	Executed as an unbounded series of Invite Transmission commands with no intervening Disconnect commands.

Test Command (X'03') *

Command		Modifier (Hex)	Meaning
Test Device Normal	T	00	Tests a device.
Test Device with Contact	Tc	01	Establishes a session with the device to be tested.
Test Device with Disconnect	Td	02	Ends a session with the device to be tested.
Test Device with Contact and Disconnect	Tcd	03	Establishes and ends a session with the device to be tested.
Test Line Normal	Tl	04	Tests a line.
Test Line with Contact	Tlc	05	Establishes a session with the iine to be tested.
Test Line with Disconnect	Tld	06	Ends a session with the line to be tested.
Test Line with Contact and Disconnect	Tlcd	07	Establishes and ends a session with the line to be tested.

Write Command (X'02')

Command		Modifier (Hex)	Meaning
Write Normal	W	00	Unit of data is 1 block.
Write with End of Message	Wm	01	Unit of data is 1 block followed by the appropriate control sequence or character for an end of message.
Write with End of Transmission	Wt	02	Unit of data is 1 block followed by the control sequence for end of transmission.

*These commands are sent in the Request Unit of a FID1 execute test request.

Command		Modifier (Hex)	Meaning
Write with Disconnect	Wd	03	Executed as a Write transmission command followed by a Disconnect command.
Write with Read (implied EOT)	Wr	06	Executed as a Write command followed by a Read command.
Write with Invite	Wi	07	Executed as a Write command with End of Transmission followed by a Disconnect command and then an Invite command.
Write with Contact**	Wc	08	Executed as a Contact command followed by a Write Normal command.
Write with Contact** (implied ETX)	Wcm	09	Executed as a Contact command followed by a Write with End of Message.
Write with Contact** (implied EOT)	Wct	0A	Executed as a Contact command followed by a Write with End of Transmission.
Write with Contact** and Disconnect (implied ETX & EOT)	Wcd	0B	Executed as a Contact command followed by a Write with End of Transmission followed by a Disconnect command.
Write with Contact** and Read	Wcr	0E	Executed as a Contact command followed by a Write with End of Transmission followed by a Read Normal command.

**Contact may not begin a telephone connection to a BSC call-in device.

Read Command (X'01')

Command		Modifier (Hex)	Meaning
Read Normal	R	00	Unit of data for this command is that specified by the TERMINAL macro at NCP generation.
Read Block	Rb	01	Unit of data for this command is the block (ends with EOB).
Read Message	Rm	02	Unit of data for this command is the message (ends with ETX (BSC) or EOT (SS)).

Command		Modifier (Hex)	Meaning
Read Transmission	Rt	03	Unit of data for this command is the transmission (ends with EOT).
Read Transmission Disconnect	Rd	04	Executed as a Read Transmission command followed by a Disconnect command.
Read with Invite	Ri	05	Executed as a Read Transmission with Disconnect followed by an Invite Normal command.

Null Command (X'00')

Unsolicited Response (X'77') (See Section 8)

Section 4. NCP Channel Commands

Command Code	Command	Description
X'01'	Write	The Write command is initiated to the NCP. Data in the host processor main storage is transferred to the NCP.
X'02'	Read	The Read command is initiated at the NCP. Data at controller storage is transferred to host processor main storage.
X'03'	No-Op	This command is required as the last CCW in a Read or Write CCW chain.
X'04'	Sense	The host initiates this command. One byte of sense data is transferred to the host.
X'09'	Write Break	The Write Break command is identical to the Write command except that it is used to indicate that it is the last or only Write command in a chain of Write CCWs.
X'31'	Write Start 0	This is the first command expected in the Write channel program after IPL of the NCP. It is also expected after each successful Write Start 1 command.
X'32'	Read Start 0	This is the first command expected in the Read channel program after IPL of the NCP. It is also expected after each successful Read Start 1 command.
X'51'	Write Start 1	This is the second command expected in the Write channel program after IPL of the NCP. It is also expected after each successful Write Start 0 command.
X'52'	Read Start 1	This is the second command expected in the Read channel program after IPL of the NCP. It is also expected after each successful Read Start 0 command.
X'61'	Write XID	This command signals the NCP that a channel contact sequence is beginning and to expect the host identification data.
X'62'	Read XID	This command notifies the NCP that the host expects to read the NCP identification data.
X'93'	Reset Restart	This command causes the NCP to reset its switches to indicate that the last Write Start and Read Start commands were Write Start 1 and Read Start 1.

Command Code	Command	Description
X'A3'	Discontact	This command tells the NCP to exit the contacted state with the host. The host: • Indicates that the channel is no longer contacted. • Indicates that attachment to the transmission group should be broken. • Releases PIUs on the channel hold and the intermediate queues.
X'C3'	Contact	This command tells the NCP to set up for operation with the host identification data.
X'E4'	Sense ID	This command requests the type and model number. NCP returns four bytes (X'FF372500) to the host.

Notes:

1. Data transfer does not occur on Read Start and Write Start commands.
2. See *IBM 3725 Communication Controller Principles of Operation,* GA33-0013, for a description of the operation of the Test I/O X'00' and Write IPL X'05' channel commands.

Channel Status and Sense Indications

The NCP returns the status to the operating system where the channel places it in the channel status word (CSW). The host program then examines the CSW to determine the status.

Status Bit	Condition	Testing Priority	
32	Attention*	2	Device status byte supplied by NCP and 3275 CA hardware.
33	Status Modifier	20	
34	Control Unit End	18	
35	Busy	19	
36	Channel End	23	
37	Device End	24	
38	Unit Check	5	
39	Unit Exception	21	
40	Prog. Controlled Interrupt	15	Channel status byte supplied by host channel hardware.
41	Incorrect Length	22	
42	Channel Program Check	16	
43	Protection Check	17	
44	Channel Data Check	4	
45	Channel Control Check	1	
46	Interface Control Check	3	
47	Chaining Check	14	

*If attention occurs with other status, the host program remembers its occurrence but proceeds with the testing of other lower priority bits.

When unit check is present in the CSW, the host program must examine the sense byte (obtained via a Sense command).

Sense Bit	Condition	Testing Priority
0	Command Reject	12
1	Intervention Required	6
2	Bus Out Check	10
3	Equipment Check	9
4	Data Check	11
5	Overrun	13
6	Not Initialized	7
7	Abort	8

Testing priority refers to the priority by which the host operating system tests the indicators in the CSW (and sense byte when UC is on in the CSW). Generally, only one of the indicators properly describes the condition of the channel while other indicators that are set on indicate secondary effects. Use the "testing priority" to determine the primary condition. Some device or control unit errors can cause more than one sense bit to be present.

Channel Program Required for ACF/NCP

The following channel programs are required—as a minimum: The number of Read CCWs must equal the number specified on the MAXBFRU= parameter on the HOST macro. The byte count in each Read CCW must equal the number specified in the UNITSZ= parameter on the HOST macro.

Read Channel Program

```
CCW X'32' or X'52',*,X'60',1      Read Start command
CCW X'02',BUF1,X'60',L'BUF1
                                  Read commands
CCW X'02',BUFn,X'60',L'BUFn
CCW X'03',*,0,1                   No-op
```

Write/Write Break Channel Program

CCW X'31' or X'51',*,X'60',1	Write Start command
CCW X'01',BUF1,X'60',L'BUF1	
–	
–	Write and/or Write Break commands
–	
CCW X'09',BUFn,X'60',L'BUFn	
CCW X'03',*,0,1	No-op

Write/Write Break and Read Combination Channel Program

CCW X'31' or X'51',*,X'60',1	Write Start command
CCW X'01',BUF1,X'60',L'BUF1	
–	
–	Write and/or Write Break commands
–	
CCW X'09',BUFn,X'60',L'BUFn	
CCW X'03',*,0,1	No-op - may be command chained†
CCW X'32' or X'52',*,X'60',1	Read Start Command
CCW X'02',BUF1,X'60',L'BUF1	
–	
–	Read commands
–	
CCW X'02',BUFn,X'60',L'BUFn	
CCW X'03',*,0,1	No-op

† This No-op is not essential for correct operation although it may be desirable for compatability when the status modifier option is selected. If the status modifier option is not selected, then the Write Break CCW may be command chained to the Read Start CCW. If status modifier is selected, the No-op should be included and not be command chained to the Read Start CCW. If compatability is desired, include the No-op in the channel program and turn the command chain flag on and off as needed.

Section 5. NCP Network Commands

The following RU bytes of a PIU in an SSCP or CDRM session are valid if RH byte 0 contains X'xB' (X'xF' for sense). The x value indicates:

6 Session control (SC)
4 Data Flow control (DFC)
2 Network control (NC)
0 Network services (NS)

Refer to the *SNA Reference Summary* for more information on SNA commands.

*Indicates a command NCP does not process.

RU	*	Command	Function
00 (sense)			Contains user sense data only.
01 00 01			Change Device Transmission Limit — Allows user to change the number of EOTs that the NCP sends to or receives from a device on a BSC/SS multipoint line before servicing other devices on the line.
01 00 02			Change Line Negative Poll Response Limit — Allows user to change the number of consecutive negative responses to polling that are acceptable before termination of the Read command.
01 00 03			Change Line Session Limit — Allows user tc change the number of BSC/SS sessions that can be active on this BSC/SS line.
01 00 04			Change Line Service-Seeking-Pause — Allows user to change the length of the pause between service seeking attempts.
01 02 01		CONTACT	Contact — Starts a contact poll operation to an SDLC station or remote communications controller.
01 02 02		DISCONTACT	Discontact — Causes the NCP to stop polling a resource.

RU	*	Command	Function
01 02 03		IPLINIT	Load Initial – Initiates the IPL of a remote communications controller.
01 02 04		IPLTEXT	Load Data – Transfers the text of a load module to a remote communications controller.
01 02 05		IPLFINAL	Load Final – Informs the remote communications controller that the load process is complete and requests it to provide the NCP entry point to be given control.
01 02 06		DUMPINIT	Dump Initial – Initiates a remote communications controller storage dump.
01 02 07		DUMPTEXT	Dump Data – Causes the remote NCP to send a portion of its storage to the SSCP.
01 02 08		DUMPFINAL	Dump Final – Informs the remote communications controller that the dump procedure is complete.
01 02 09		RPO	Remote Power Off – Invokes a power-off sequence in a remote communications controller.
01 02 0A		ACTLINK	Activate Link – Activates the data set associated with the SDLC link and, for leased lines, initiates the continuous transmission of flag characters.
01 02 0B		DACTLINK	Deactivate Link – Deactivates the data set associated with the link.
01 02 0E		CONNOUT	Connect Out – Causes the NCP to initiate an outbound call on a switched SDLC link. For auto-dial, the NCP performs the dial operation with the dial digits provided in the command. For manual dial, the NCP enables the link and the operator performs the dial operation.
01 02 0F		ABCONN	Abandon Connection – Causes the physical unit to terminate a switched connection.

RU	•	Command	Function
01 02 11		SETCV	Set Control Vector — Time and Date *RU byte 5 = X'01'* Allows the SSCP to replace the time and date in the NCP. The time is maintained in 24 hour continential time. *Note:* The SSCP is not allowed to retrieve the time and date with a Sense State Vector request. Set Control Vector — NCP Subarea *RU byte 5 = X'02'* Associates a remote NCP's subarea with a particular SDLC link. Set Control Vector -- Physical Unit *RU byte 5 = X'03'* Changes dynamic fields in the common physical unit block (CUB) that are associated with the specified physical unit. Set Control Vector — Logical Unit *RU byte 5 = X'04'* Changes dynamic fields in the logical unit control block (LUB) and completes initialization of the logical unit vector table (LUV). Set Control Vector — Channel Attention Delay *RU byte 5 = X'05'* Allows the SSCP to change the channel attention delay value in the CAB. *Note:* The SSCP is not allowed to change attention delay in a remote NCP.

RU	*	Command	Function
01 02 14		ESLOW	Entering Slowdown — Informs the SSCP that the normal flow of data in the NCP is impeded due to limited available buffers.
01 02 15		EXSLOW	Exiting Slowdown — Informs the SSCP that the limitation on NCP buffers is lifted. Normal data flow to the NCP may resume.
01 02 16		ACTCONNIN	Activate Connect In — Causes the NCP to put the specified link in answer mode. This enables the link to answer incoming calls.
01 02 17		DACTCONNIN	Deactivate Connect In — Causes the NCP to discontinue answer mode on the specified link.
01 02 18		ABCONNOUT	Abandon Connect Out — Causes the NCP to halt the dialing operation over the specified link.
01 02 19		ANA	Assign Network Addresses — Assigns a set of network addresses to a specified physical unit. (SDLC switched link only)
01 02 1A		FNA	Free Network Addresses — Causes the NCP to free the network addresses that were assigned to a physical unit.
01 02 1B	*	REQDISCONT	Request Discontact — Requests the NCP to issue a Discontact.
01 02 80		CONTACTED	Contacted — Informs the SSCP of conditions presently existing in the resource.
01 02 81		INOP	Inoperative — Reports a loss of contact to the SSCP.
01 02 84		REQCONT	Request Contact — Informs the SSCP that a physical connection has been established between the NCP and a physical unit (contains the station ID).
01 02 85		LSA-NS	Lost Subarea — Informs the SSCP that subareas have been lost.

RU	*	Command	Function
01 03 01		EXECTEST	Execute Test — Causes the NCP to execute an online terminal test (OLTT) for the resource specified by the network address.
01 03 02		ACTTRACE	Activate Trace — Used by the host to initiate: • Line trace • Scanner interface trace • Internal PIU trace (includes TG trace) • Generalized PIU trace.
01 03 03		DACTTRACE	Deactivate Trace — Used by the host to terminate: • Line trace • Scanner interface trace • Internal PIU trace (includes TG trace) • Generalized PIU trace.
01 03 11		SETCV	See RU 41 03 11.
01 03 31		DISPSTOR	Display Storage — Requests NCP physical services to return up to 256 bytes of NCP-, MOSS-, or CSP storage beginning at a specified location.
01 03 34		RECSTOR	Record Storage — Sent to SSCP with the data previously requested by a successful Display Storage command.
01 03 81		RECMS	Record Maintenance Statistics — See Section 17.
01 03 82		RECTD	Record Test Data — Informs the SSCP of the current status of an online terminal test (OLTT).
01 03 83		RECTRD	Record Trace Data — Sends line trace information to the SSCP.
01 06 01	*	CINIT	Control Initiate.
01 06 02	*	CTERM	Control Terminate.
01 06 04	*	NSPE	NS Procedure Error — Informs the issuer of a nonsequenced request that an error occurred after the request was accepted but before the procedure completed.
01 06 80	*	INIT-OTHER	Initiate-Other.
01 06 81	*	INIT-SELF	Initiate-Self — Allows a logical unit to request a session with the SSCP.
01 06 82	*	TERM-OTHER	Terminate-Other.

RU	*	Command	Function
01 06 83	*	TERM-SELF	Terminate-Self — Allows a logical unit to request the termination of a session with the SSCP.
01 06 85	*	BINDF	Bind Failure.
01 06 86	*	SESSST	Session Started.
01 06 87	*	UNBINDF	Unbind Failure.
01 06 88		SESSEND	Session Ended.
04	*	LUSTAT	Logical Unit Status — Sends status information from a logical unit to its session partner.
05 (DFC)	*	RTR	Ready to Receive — Used in bracket protocol to indicate that the bidder is now allowed to initiate a bracket.
05 (NC)		LSA	Lost Subarea — Informs adjacent NCP or SSCP that subareas have been lost.
06 (NC)		ER. INOP	Explicit Route Inoperative — Informs the NCP that an ER is inoperative.
07		ANSC	Auto Network Shutdown Complete — Informs the SSCP that the NCP auto network shutdown is complete.
08 (sense)			Request Rejected.
09 (NC)		ER.TEST	Explicit Route Test — Determines the network address of the last usable node in an explicit route, or verifies that an explicit route is usable for data transfer.
0A (NC)		ER.TEST.REPLY	Explicit Route Test Reply — Carries results of an ER.TEST command back to the ER.TEST command originator.
0B (NC)		ER.ACT	Activate Explicit Route — Activates an explicit route.
0C (NC)		ER.ACT.REPLY	Activate Explicit Route Reply — Carries results of an ER.ACT command back to the ER.ACT command originator.
0D (NC)		ACTVR	Activate Virtual Route — Activates a virtual route.

RU	*	Command	Function
0D (SC)		ACTLU	Activate Logical Unit – Establishes a session between the SSCP and a logical unit.
0E (NC)		DACTVR	Deactivate Virtual Route – Terminates a virtual route.
0E (SC)		DACTLU	Deactivate Logical – Terminates the session between the SSCP and the logical unit.
0F (NC)		ER.OP	Explicit Route Operative – Informs the NCP that the explicit route is operative.
10 (sense)			Request Error.
11		ACTPU	Activate Physical Unit – Establishes a session between the SSCP-NCP PU physical services or SSCP-PU physical services.
12		DACTPU	Deactivate Physical – Terminates the session between the SSCP-NCP PU physical services or SSCP-PU physical services.
14	*	ACTCDRM	Activate CDRM Session.
15	*	DACTCDRM	Deactivate CDRM session.
20 (sense)			State Error.
31		BIND	Bind Session – Establishes a session between a host application program and a logical unit.

RU	*	Command	Function
32		UNBIND	Unbind Session – Terminates the session between the host application program and a logical unit.
40 (sense)			RH Usage Error.
41 02 10		RNAA	Request Network Address Assignment – Requests the NCP to allocate the specified number of network addresses to the specified network resource and to update path control routing.
41 02 87 (NC)		LCP	Lost Control Point – Informs each SSCP in session with the NCP physical unit services of a lost SSCP.
41 03 04		REQMS	Request Maintenance Statistics – Used by the host to solicit Link Problem Determination Aid (LPDA) status, summary error data, and EC change level data. It is also used by the host to enable Session Trace, inhibit Session Trace, or request trace data.
41 03 05		TM	Test Mode – Causes the NCP to execute an SDLC link test (operational level 2-LL2) for the dedicated resource specified by the network address or to stop an active link test.
41 03 11		SETCV	Set Control Vector – Intensive Mode *RU byte 5 = X'08'* Allows the SSCP to activate or deactivate intensive mode.
41 03 84		RECFMS	Record Formatted Maintenance Statistics – See Section 18.
41 03 85		RECTR	Record Test Results – Sends the test results of the SDLC link test, level 2, to the SSCP.
41 03 86		ER.TESTED	Explicit Route Tested – Copy of the explicit route test reply request. Notifies the owning SSCP of the results of an *ER test*.
50			Initialization Complete – Informs the SSCP that the NCP initialization is complete.

RU	•	Command	Function
51			Switch Line to NCP Mode (BSC/SS) – Switches the line from EP to NCP mode.
52			Switch Line to EP Mode (BSC/SS) – Switches the line from NCP to EP mode.
80 (sense)			Path Error.
80	•	QEC	Quiesce at End of Chain – Directs a function manager to enter the quiesce state at the end of the chain it is currently sending.
81 (DFC)	•	QC	Quiesce Complete – Indicates that the issuer of the request has placed itself in the quiesce state.
81 06 01	•	CINIT	Control Initiate.
81 06 02	•	CTERM	Control Terminate.
81 06 81	•	INIT-SELF	Initiate-Self.
81 06 83	•	TERM-SELF	Terminate-Self.
81 06 85	•	BINDF	Bind Failure.
81 06 86	•	SESSST	Session Started.
81 06 87	•	UNBINDF	Unbind Failure.
81 06 88	•	SESSEND	Session Ended.
81 86 41	•	CDINIT	Cross-Domain Initiate.
81 86 43	•	CDTERM	Cross-Domain Terminate.
81 86 45	•	CDSESSSF	Cross-Domain Setup Failure.
81 86 46	•	CDSESSST	Cross-Domain Session Started.
81 86 47	•	CDSESSTF	Cross-Domain Session Takedown Failure.
81 86 48	•	CDSESSEND	Cross-Domain Session Ended.
81 86 49	•	CDTAKED	Cross-Domain Takedown.
81 86 4A	•	CDTAKEDC	Cross-Domain Takedown Complete.
81 86 4B	•	CDCINIT	Cross-Domain Control Initiate.
82	•	RELQ	Release Quiesce – Releases a function manager from the quiesce state.
83	•	CANCEL	Cancel – Terminates a partially sent chain of FM data requests.

RU	*	Command	Function
84	*	CHASE	Chase – Requests the receiving function manager to return all outstanding data responses and data flow control responses.
A0		SDT	Start Data Traffic – Enables data flow in a session. It is the final request in a data flow initialization or recovery procedure.
A1		CLEAR	Clear – Removes and discards all PIUs with the same OAF/DAF pair from the destination process queue.
A2	*	STSN	Set and Test Sequence Numbers – Resynchronizes the specified sequence number.
A3	*	RQR	Request Recovery – Initiates data traffic recovery procedures.
C0	*	SHUTD	Shutdown – Requests the secondary function manager to enter the highest level of quiesce.
C1	*	SHUTC	Shutdown Complete – Indicates that the sender has shutdown.
C2	*	RSHUTD	Request Shutdown – Informs the primary function manager that the secondary function manager is at 'end of job' and requests the primary function manager to issue a Shutdown request.
C8	*	BID	Bid – Used in bracket protocol to request permission to begin a bracket.
C9	*	SIG	Signal – Sends an expedited signal through the network against the normal flow of data.

The following command sequence is followed for bring-up and session initiation for switched SDLC on a channel-attached NCP BNN link. The nonswitched SDLC sequence is provided by skipping those entries identified as being required for switched.

Command	Description
WXID*	Host alerts NCP beginning channel contact.
Write Break*	Host sends host XID to NCP.
RXID*	Host expects to receive NCP XID.
Read*	Host reads NCP XID.
Contact*	From Host to put NCP in contacted state. (activates channel TG)
. . . .	Explicit route status exchanged via ER OP PIUs.
Activate Explicit Route	From SSCP to NCP.
Activate ER Reply	From NCP to SSCP.
Activate Virtual Route	From SSCP to NCP.
. . . .	VR pacing responses exchanged.
Activate Physical Unit	From SSCP to NCP physical services.
Start Data Traffic	From SSCP to NCP physical services.
Set State Vector	From SSCP to NCP physical services.
Set Control Vector	From SSCP to NCP physical services.
Activate Link	From SSCP to NCP physical services.
Contact Out or Activate Connect In (Switched)	SSCP to NCP physical services CPM-OUT.
Request Contact (Switched)	NCP physical services to SSCP.
Set Control Vector PU (Switched)	SSCP to NCP physical services.
Contact	From SSCP to NCP physical services.
Contacted	From NCP physical services to SSCP.
Activate Physical Unit	SSCP to NCP physical unit process queue.
Assign Network Addresses (Switched)	SSCP to NCP physical services.
Set Control Vector LU (Switched)	SSCP to NCP physical services.
Activate Logical Unit	SSCP to LU/SSCP process queue.
Initiate-Self (logical unit-initiated logon only)	From LU to SSCP.
Bind	Host application to LU.
Start Data Traffic	From host application to LU.
Inoperative**	From NCP physical services to SSCP.

* Host channel commands. The host channel Read and Write commands for the other PIUs are not shown.

** May be required at any point in the command sequences after the Activate Link command.

The following command sequence brings up a cross-domain INN link.

Command	Description
WXID*	Host alerts NCP beginning channel contact.
Write Break*	Host sends host XID to channel-attached NCP.
RXID*	Host expects to receive NCP XID.
Read*	Host reads NCP XID.
Contact*	Host puts channel-attached NCP in contacted state. (activates channel TG)
. . . .	Explicit route status exchanged via ER OP PIUs.
Activate Explicit Route	From SSCP to channel-attached NCP.
Activate ER Reply	From channel-attached NCP to SSCP.
Activate Virtual Route	From SSCP to channel-attached NCP.
. . . .	VR pacing responses exchanged.
Activate Physical Unit	SSCP to channel-attached NCP's physical services.
Start Data Traffic	SSCP to channel-attached NCP's physical services.
Activate Link	SSCP to link-attached NCP's physical services.
Contact	SSCP to channel-attached NCPs (activates link TG).
Contacted	Channel-attached NCP to SSCP.
Activate Explicit Route	SSCP to channel-attached NPC.
Activate ER Reply	Channel-attached NCP to SSCP.
Activate Virtual Route	SSCP to channel-attached NCP.
. . . .	VR pacing responses exchanged.
Activate Physical Unit	SSCP to link-attached NCP's physical services.
Start Data Traffic	SSCP to link-attached NCP's physical services.

* Host channel commands. The host channel Read and Write commands for the other PIUs are not shown.

Abandon Connect Out (ABCONNOUT) RU

Request Format
Positive Response Format – only fields denoted by heavy underline.

			55(37) Network Services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'18'	58(3A) Network address of the link.	

Abandon Connection (ABCONN) RU

Request Format
Positive Response Format – only fields denoted by a heavy underline.

			55(37) Network Services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'0F'	58(3A) Network address of the link.	

Activate Connect In (ACTCONNIN) RU

Request Format
Positive Response Format — only fields denoted by heavy underline.

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'16'	58(3A) Network address of the link.	
60(3C) SDLC type*			

*Indicates that a byte expansion follows.

Byte Expansions for ACTCONNIN

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) SDLC type	x	1=SDLC primary. 0=SDLC secondary.

Activate Explicit Route (NC.ER.ACT) RU

Request Format

			55(37) RU4ERCMD Request code X'0B'
56(38) Reserved		58(3A) RU4RUFC Format code X'01'	59(3B) Reserved
60(3C) RU4ERL ER length.	61(3D) RU4MERL Maximum ER length.	62(3E) RU4RQDSA Destination subarea. (right justified)	
64(40) RU4RQDSA (Cont.) Destination subarea.		66(42) * Route definition capability of RU sender.	67(43) RU4DERN Destination ERN (.... xxxx)
68(44) RU4RQOSA Request origination subarea. (right justified)			
72(48) RU4RERNM Reverse ERN mask.		74(4A) RU4MPS X'0000'	
76(4C) Reserved			
84(54)-91(5B) RU4ARSI Time of day.			

*Indicates a byte expansion follows.

Byte Expansion for Activate Explicit Route

Offset/Field Name	Bit Pattern/ Hex Value	Contents
66(42)	1...	RU sender allows dynamic route definition.

Activate Explicit Route Reply (NC.ER.ACT.REPLY) RU

Request Format

			55(37) RU4ERCMD Request code X'0C'
56(38) Reserved		58(3A) RU4RUFC Format code X'01'	59(3B) RU4ARTF* Type field
60(3C) RU4ERL ER length	61(3D) RU4MERL Maximum ER length.	62(3E) RU4RQDSA Destination subarea. (right justified)	
64(40) RU4RQDSA (Cont.) Destination subarea.		66(42) Reserved	67(43) RU4DERN Destination ERN (. . . . xxxx)
68(44) RU4RQOSA Request origination subarea. (right justified)			
72(48) RU4RERNM Reverse ERN mask		74(4A) RU4MPS X'0000'	
76(4C) X'0000'		78(4E)	
80(50) Reserved			
84(54) RU4ARSI Time of day			
92(5C) Reserved		94(5E) RU4SARB Subarea of reply builder.	
96(60) RU4SARB (Cont.) *Subarea of reply builder.*		98(62) RU4SATG* Subarea on other end of TG.	
100(64) RU4SATG* (Cont.) Subarea on other end of TG.		102(66) RU4RTGN Reported TG's TGN	103(67) Reserved

*Indicates a byte expansion follows.

Activate Explicit Route Reply RU (Continued)

Byte Expansions for Activate Explicit Route Reply

Offset/Field Name	Bit Pattern/ Hex Value	Contents
59(3B) RU4ARTF		Type field.
	X'00'	Route activated.
	X'01'	Race condition by two nodes requesting ER activation. The PU with highest subarea sends X'01' reply.
	X'02'	Route not reversible.
	X'03'	Other end of TG is a SNA 3 or SNA 4.1 node; does not support ER.
	X'04'	Maximum ER length exceeded.
	X'05'	TG not active.
	X'06'	ER not defined in the reply-building node.
98(62) RU4SATG	Subarea on other end of TG; depends on Type field in RU4ARTF.	
	Type	**Subarea address defined**
	X'00'	Reserved
	X'02'	Subarea on ER prior to that with no reverse ER defined.
	X'03'	Subarea does not support ER and VR protocols.
	X'04'	Subarea on ER preceding the subarea where ER length (ACT ER byte 5) is incremented beyond max ER length (byte 6).
	X'05'	Subarea on other end of inactive TG.
	X'06'	Subarea on ER from which PU (ER not defined) received corresponding NC.ER.ACT.

Activate Link (ACTLINK) RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'0A'	58(3A) Network address of link to be activated.	

Activate Logical Unit (ACTLU) RU

Request Format

			55(37) Request code (ACTLU) X'0D'
56(38) Type of activation*	57(39) FM ¦ TS profile ¦ profile		

Positive Response Format

			55(37) Request code (ACTLU) X'0D'
56(38) Type of activation*	57(39) FM ¦ TS profile ¦ profile	58(3A) Vector key X'00'	59(3B) Maximum RU size
60(3C) LU capabilities		62(3E) Reserved	63(3F) Control vector key. X'0C'
64(40) Length of vector X'06'	65(41) LU capabilities	66(42) Session limit	
68(44) Session count		70(46) Session capability	

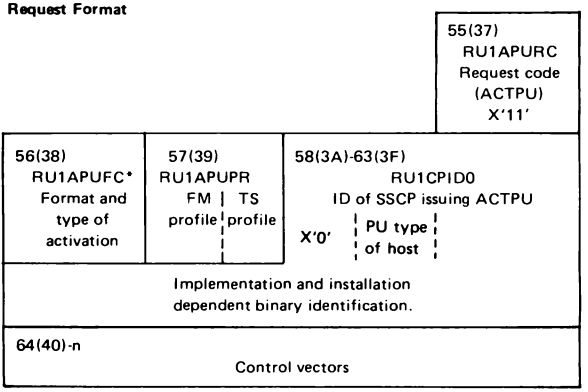
* Indicates a byte expansion follows.

Byte Expansions for Activate Logical Unit

Offset/Field Name	Bit Pattern/ Hex Value	Contents
56(38)		Type of activation
	01	Cold, IPL not required.
	10	Error-recovery procedure (ERP).

Activate Physical Unit (ACTPU) RU

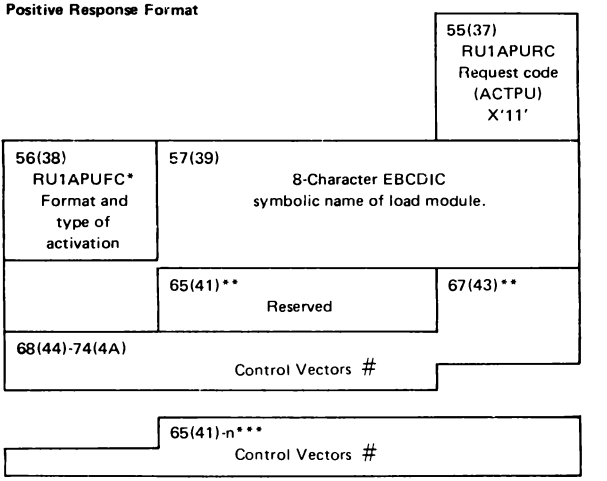
Request Format



*Indicates a byte expansion follows.

Activate Physical Unit (ACTPU) RU

Positive Response Format



*Indicates a byte expansion follows.
**If byte 56(38) indicates format 0, byte 56(38) is the end of the RU. If the format is type 1, bytes 65(41) through 74(4A) are present.
***If the format is type 3, bytes 65(41) through n are present.
For control vector formats, see *Systems Network Architecture Reference Summary,* GA27-3136.

Byte Expansions for Activate Physical Unit

Offset/Field Name	Bit Pattern/ Hex Value	Contents
56(38) RU1APUFC		Format and type of activation.
	..00	Format 0 — No control vector.
	..01	Format 1 — Control vector present.
	..11	Format 3 — Control vector present.
		Type of activation
	01	Cold, IPL not required.
	10	Error-recovery procedure (ERP).

Activate Trace (ACTTRACE) RU

Request Format

		55 (37) Network services X'01'
56(38) Physical maintenance services X'03'	57(39) Request code X'02'	58(3A) Network address of the link to be traced.
		Network address of the NCP PU when Type = GPT.
60(3C) Trace type*	61(3D) Option*	62(3E) Hierarchy address for GPT.
		Count* for LT/SIT.

*Indicates that a byte expansion follows.

Byte Expansion for ACTTRACE

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C)		Trace type.
	0000 0001	Line trace (LT) alone.
	0000 1000	Scanner interface trace (SIT) alone.
	0000 1001	LT and SIT.
	0100 0000	Generalized PIU trace. (Never combined)
	1000 0000	Internal PIU trace (IPT) alone. (Includes TG trace)
	1000 0001	LT and IPT.
	1000 1000	IPT and SIT.
	1000 1001	LT, IPT, and SIT.
61(3D)		Option: Generalized PIU trace (GPT).
	X'01'	Specific hierarchy — bytes 7 and 8 contain hierarchy address.
	X'00'	All eligible resources.
		Option: LT/IPT/SIT.
	X'01'–X'FF'	Time interval between entries.
62(3E)		GPT:
	Bytes 7 and 8	Network address of specific hierarchy.
		LT (CSP normal mode) and SIT:
	Byte 7	Count of data bytes to copy.
	X'00'	Trace no data.
	X'FF'	Trace all data.
	Byte 8	Reserved.

Activate Virtual Route (NC.ACTVR) RU

Request Format
Positive Response Format – only those fields denoted by a heavy underline.

			55(37) RU4AVRRC Request code X'0D'
56(38) Reserved		58(3A) RU4AVRFC Format code (ACTVR) X'01'	59(3B) Reserved
60(3C) RU4RCVER Receive ERN mask		62(3E) RU4SNDER Send ERN mask	
64(40) RU4VRSSN VR send sequence number		66(42) Reserved	67(43) RU4MAXWS Maximum pacing-group size
68(44) Reserved	69(45) RU4MINWS Minimum pacing-group size	70(46) RU4MSPL Maximum send PIU length.	
72(48) RU4MRPL Maximum receive PIU length			

Negative Response Format

			55(37) 1st byte of exception resp. (See Appendix 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense	58(3A) 2nd byte of user sense	59(3B) Request code X'0D'
60(3C) Reserved field			

Assign Network Address (ANA) RU

Request Format
Positive Response Format – only fields denoted by heavy underline.

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'19'	58(3A) Network address of the physical unit.	
60(3C) Number of network addresses to be assigned.	61(3D) Type: X'80' noncon-tiguous	62(3E)-n Network addresses to be assigned. (2 bytes each.)	

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9.)
56(38) 2nd byte of exception response	57(39) 1st byte of user sense.	58(3A) 2nd byte of user sense.	59(3B) Network services X'01'
60(3C) Physical configuration services X'02'	61(3D) Request code X'19'		

Auto Network Shutdown Complete (ANSC) RU

Request Format

55(37) ANS complete X'07'

56(38) ANS type.*

*Indicates a byte expansion follows.

Byte Expansion for ANSC

Offset/Field Name	Bit Pattern/ Hex Value	Contents
56(38) ANS type	X'01'	Panel initiated.
	X'02'	Attention or activity initiated.
	X'03'	Unexpected Activate Physical initiated.
	X'04'	DISC initiated.
	X'05'	SNRM initiated.
	X'06'	Irrecoverable path error initiated.
	X'07'	Deactivate Physical initiated.
	X'08'	Lost subarea initiated.

Bind Session RU

Request Format

Positive Long Response Format—Same as request format but session parameters may have changed. RU1TYP=X'00' – Negotiable Bind only.

			55(37) RU1RC0 Request code. (Bind) X'31'
56(38) RU1TYP* Format and type.	57(39) RU1PRO FM profile.	58(3A) RU1TS Transmission subsystem (T5) profile.	59(3B) RU1FMP* Bracket protocol for host.
60(3C) RU1FMS* Bracket protocol for device.	61(3D) RU1FMC* Bracket protocol common to both units.	62(3E) RU1FMC1*	63(3F) RU1TSU1* Inbound pacing
64(40) RU1TSU2 NCP/LU pacing	65(41) RU1TSU3 TS usage. (SLU max RU)	66(42) RU1TSU4 TS usage. (PLU max RU)	67(43) RU1TSU5* Host/NCP pacing
68(44) RU1TSU6 TS usage	69(45) RU1PSP PS profile.	70(46) thru n RU1PSU Presentation Service (PS)	
Usage and other fields. NCP does not use these RU fields nor those at hex offsets X'31', X'32', X'34', and X'35'.			

*Indicates a byte expansion follows.

Positive Short Response Format—for non-negotiable Bind only.

	55(37) RU1RC0 Request code. (Bind) X'31'
56(38) RU1TYP Format and type X'01'	

Bind Session RU (Continued)

Negative Short Response Format—for both negotiable and non-negotiable Bind.

			55(37) 1st byte of exception resp. (See Section 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense X'00'	58(3A) 2nd byte of user sense X'00'	59(3B) RU1RC0 Request code. (Bind) X'31'
60(3C) RU1TYP Format and type.			

*Indicates a byte expansion follows.

Byte Expansions for Bind

Offset/Field Name	Bit Pattern/ Hex Value	Contents
56(38) RU1TYP		Format (bits 0-3) and type (bits 4-7).
	X'00'	Negotiable Bind
	X'01'	Non-negotiable Bind
59(3B) RU1FMP		Bracket protocol for host.
	x. . .	1 = Allow multiple RU chains. 0 = Allow single RU chains.
	.x . .	1 = Multiple chains outstanding. 0 = Only one chain.
	. .xx	00 = No response. 01 = No definite request. 10 = Always definite request. 11 = Any.
	. .1 .	Compression.
	1	Primary will send EB.
60(3C) RU1FMS		Bracket protocol for device. Same definitions as RU1FMP except that . . . . . .1 indicates that the secondary will send EB.

Byte Expansions for Bind (Continued)

Offset/Field Name	Bit Pattern/ Hex Value	Contents
61(3D) RU1FMC		Bracket protocol common to both units.
	.1. . .	May have FM header.
	. .1.	Bracketed session.
	. . .x	1 = Unconditional EB for unidirectional. 0 = Unconditional all.
	. . . . 1. . .	Alternate code.
62(3E) RU1FMC1		Bracket protocol common to both units.
	xx. .	00 = Duplex. 01 = Half-duplex contention. 10 = Half-duplex flip-flop. 11 = Reserved.
	. .x.	1 = Sender responsible. 0 = Primary responsible.
	. . .x	1 = Primary first speaker. 0 = Secondary first speaker.
	xx. .	00 = Duplex. 01 = Half-duplex contention. 10 = Half-duplex flip-flop. 11 = Reserved.
	. .1.	Related chains.
	. . .x	1 = Primary wins contention. 0 = Secondary wins contention.
63(3F) RU1TSU1		Inbound pacing
	x. . .	1 = SLU-to-PLU 2-stage pacing. 0 = SLU-to-PLU 1-stage pacing.
67(43) RU1TSU5		Host/NCP Pacing
	x. . .	1 = PLU-to-SLU 1-stage pacing. 0 = PLU-to-SLU 2-stage pacing.

Change Device Transmission Limit (BSC/SS) RU

Request Format

			55(37) Network services X'01'
56(38) BSC/SS X'00'	57(39) Request X'01'	58(3A) Network address of a BSC/SS multipoint line.	
60(3C) New transmission limit.			

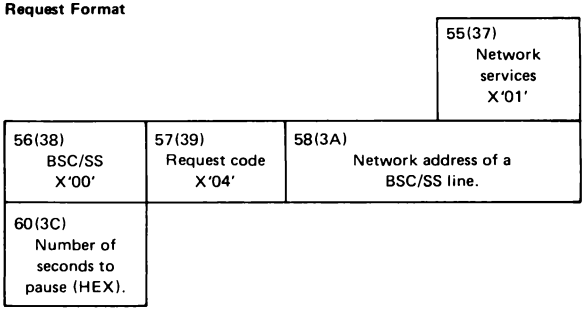
Change Line Negative Poll Response Limit (BSC/SS) RU

Request Format

			55(37) Network services X'01'
56(38) BSC/SS X'00'	57(39) Request code X'02'	58(3A) Network address of the BSC/SS line.	
60(3C) New negative poll response limit.			

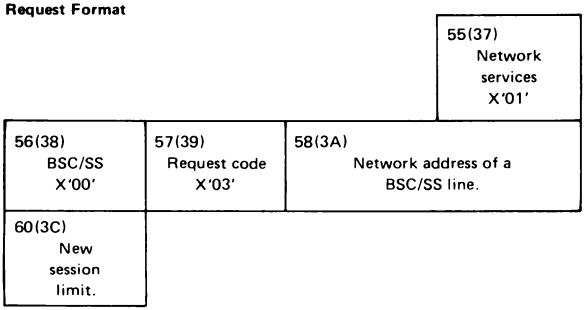
Change Line Service-Seeking Pause (BSC/SS) RU

Request Format



Change Line Session Limit (BSC/SS) RU

Request Format



Clear RU

Request and Response Formats

55(37) Request code X'A1'

Connect Out (CONNOUT) RU

Request Format
Positive Response Format-only fields denoted by a heavy underline.

55(37) Network services X'01'			
56(38) Physical configuration services X'02'	57(39) Request code X'0E'	58(3A) Network address of the line.	
60(3C) Reserved	61(3D) Dial type*	62(3E) Dial retry limit	63(3F) Number of dial digits
64(40)-n Dial digits			

*Indicates that a byte expansion follows.

Byte Expansion for CONNOUT

Offset/Field Name	Bit Pattern/ Hex Value	Contents
61(3D) Dial type	x. . .	1 = SDLC secondary. 0 = SDLC primary.
	. x. .	1 = Manual dial. 0 = Auto dial.

Contact RU

Request Format

		55(37) Network services. X'01'
56(38) Physical configuration services. X'02'	57(39) Request code. X'01'	58(3A) Network address of the resources to be contacted.

Contacted RU

Request Format

		55(37) RU1BT0 1st prefix byte-network services. X'01'
56(38) RU1BT1 2nd prefix byte-physical config. services. X'02'	57(39) RU1RC2 Request code (Contacted) X'80'	58(3A) RU1NA Local link station identifier of the resource contacted.
60(3C) RU1LDS* Load status.		

If load status at location 60(3C) is X'04', the following parameters are included.

	61(3D) Resolved TG number.	62(3E) Reserved
64(40) Reserved	65(41) Subarea address of PU in adjacent node.	66(42)–73(49) Load module name.

*Indicates a byte expansion follows.

Contacted RU (Continued)

If load status at location 60(3C) is X'05', X'07', or X'08', the following parameters are included.

	61(3D) Length 'N' of received XID data.	62(3E)–[62(3E)+N] XID data received from adjacent node.
63(3F)+N Length 'Y' of send XID data.	[64(40)+N]–[63(3F)+N+Y] XID data sent to adjacent subarea.	

Byte Expansions for Contacted

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) RU1LDS		Load status.
	X'01'	Loaded.
	X'02'	Load required.
	X'03'	Error on Contact.
	X'04'	Loaded status for SNA 4.2 host. Parameters follow byte 60(3C).
	X'05'	Exchanged XID parameters; not compatible. Parameters follow byte 60(3C).
	X'07'	No routing capability to adjacent subarea. Parameters follow byte 60(3C).
	X'08'	Incompatible parameters for addition of link station to currently active TG. Parameters follow byte 60(3C).

Deactivate Connect In (DACTCONNIN) RU

Request Format
Positive Response Format—only fields denoted by a heavy underline.

55(37) Network services. X'01'

56(38) Physical configuration services. X'02'	57(39) Request code. X'17'	58(3A) Network address of the link.

Deactivate Trace (DACTTRACE) RU

Request Format

55(37) Network services. X'01'

56(38) Physical maintenance services. X'03'	56(39) Request code. X'03'	58(3A) Network address of the link on which line trace is active. Network address of the NCP PU when Type = GPT.
60(3C) Trace type.*	61(3D) Option* (Type= GPT only)	62(3E) Network address of specific hierarchy. (Type = GPT only)

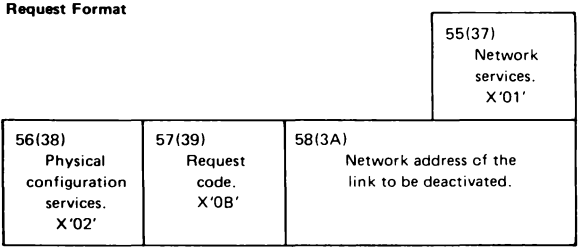
*Indicates that a byte expansion follows.

Byte Expansion for DACTTRACE

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C)		Trace type.
	0000 0001	Line trace (LT) alone.
	0000 1000	Scanner interface trace (SIT) alone.
	0000 1001	LT and SIT.
	0100 0000	Generalized PIU trace. (Never combined)
	1000 0000	Internal PIU trace (IPT) alone.
	1000 0001	LT and IPT.
	1000 1000	IPT and SIT.
	1000 1001	LT, IPT, and SIT.
61(3D)		Option: Generalized PIU trace (GPT)
	X'01'	Specific hierarchy — bytes 7 and 8 contain hierarchy address.
	X'00'	All eligible resources.

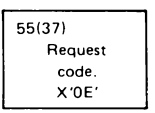
Deactivate Link (DACTLINK) RU

Request Format



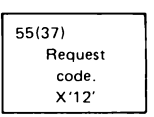
Deactivate Logical (DACTLU) RU

Request/Response Format



Deactivate Physical (DACTPU) RU

Request/Response Format



Deactivate Virtual Route (NC.DACTYR) RU

Request Format
Positive Response Format—only those fields denoted by a heavy underline.

		55(37) RU4DVRRC Request code X'0E'
56(38) Reserved	58(3A) RU4DVRFC Format code (DACTVR) X'01'	59(3B) RU4DVRT* DACTVR type.

Byte Expansions for Deactivate Virtual Route

Offset/Field Name	Bit Pattern/ Hex Value	Contents
59(3B) DACTVR type	X'01' X'02'	Orderly Forced } NCP makes no distinction between these.

Discontact RU

Request Format

			55(37) Network services. X'01'
56(38) Physical configuration services. X'02'	57(39) Request code. X'02'	58(3A) Local link station identifier of the resource to discontact.	

Display Storage (DISPSTOR) RU

Request Format

			55(37) RU1BT0 Network services. X'01'
56(38) RU1BT1 Physical configuration services. X'03'	57(39) RU1RC2 Request code. X'31'	58(3A) RU1STNA Network address of the resource to be displayed.	
60(3C) RU1STYPE Display type.*	61(3D) Reserved	63(3E) RU1SLENG Number of bytes to be displayed.	
64(40) RU1STRTA Location of beginning of display.			

*Indicates that a byte expansion follows.

Byte Expansion for DISPSTOR

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C)	X'0X'	Display type. B'0000'=Static B'0001'=Non-static
	X'10'	MOSS storage
	X'20'	CSP storage

Dump Final RU

Request Format

		55(37) Network services. X'01'
56(38) Physical configuration services. X'02'	57(39) Request code. X'08'	58(3A) Local link station identifier of the resource being dumped.

Dump Initial (DUMPINIT) RU

Request Format

		55(37) Network services. X'01'
56(38) Physical configuration services X'02'	57(39) Request code. X'06'	58(3A) Local link station identifier of the resource to be dumped.

Positive Response Format

		55(37) Network services. X'01'
56(38) Physical configuration services. X'02'	57(39) Request code. X'06'	58(3A)–460(28C) 400 bytes (see expansion).

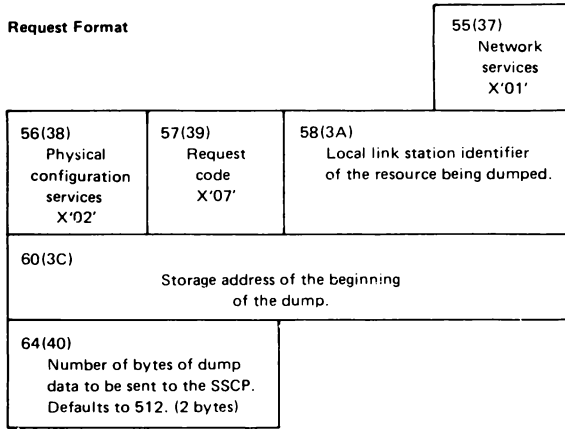
Byte Expansion for DUMPINIT

Offset/Field Name	Bit Pattern/ Hex Value	Contents
58(3A)—460(28C)		
(1)	4 bytes *	Storage size of the controller to be dumped.
(2)	32-4 byte fields	Local store registers of the controller to be dumped.
(3)	256 bytes	Storage keys of the controller to be dumped.
(4)	8 bytes	Protect keys
	Byte 399	IPL Indicators
	1...	Dump.
	.1..	NCP invoked IPL.
	...1	SIM received.
	Byte 400	Utility status
	1...	Monitor IPL state.
	.1..	Load state.
	..1.	Dump state.
	...1	Entry point received or dump final received.
	1...	I-type in hold.
	..1.	High 8K storage in from diskette.
	1	Character mode.
	Bytes 401-402	Reserved
(5)	4 bytes	
	Byte 1	
	x...	1=Initial test not run during last sequence-storage still valid. 0=Initial test run-most of storage overlaid.
	...1	Host Initiated IPL while NCP was sending SIM SDLC command over link.
	Byte 1	
	.... ..1.	High 8K of storage already retrieved from previous dump. Storage locations X'0000'—X'2FFF' no longer valid.

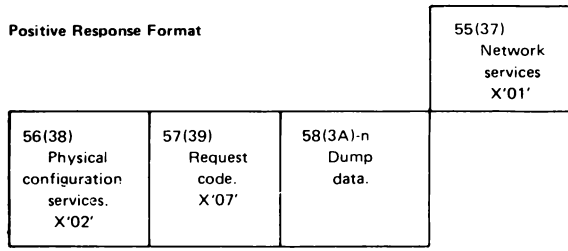
* Bit 7 =1 in the forth byte indicates the dump was created by the 3725 load dump program.

Dump Text (DUMPTEXT) RU

Request Format



Positive Response Format



Entering Slowdown (ESLOW) RU

Request Format

		55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'14'	58(3A) Network address of NCP physical services.

Execute Test (EXECTEST) RU

See Appendix F — Online Tests in Advanced Communications Function for Network Control Program for the IBM 3725 Diagnosis Reference, LY30-3071.

Exiting Slowdown (EXSLOW) RU

Request Format

		55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'15'	58(3A) Network address of NCP physical services.

Explicit Route Inoperative (NC.ER.INOP) RU

Request Format

		55(37) RU4ERCMD Request code X'06'
56(38) Reserved	58(3A) RU4RUFC Format code X'01'	59(3B) RU4RSNCD* Reason code
60(3C) RU4ORGSA Originating subarea (right justified)		
64(40) RU4ADJSA Adjacent subarea address on other end of TG. (right justified)		
68(44) RU4TGN TG number of affected TG.	69(45) RU4CNTSA Number of subareas affected.	70(46) RU4ASA Affected subarea (right justified)
72(48) RU4ASA (cont.) Affected subarea (right justified)		74(4A) RU4ERNM Mask of affected ER numbers.
75(4C)-n Groups of six bytes with each group having information similar to that in Bytes 70(46) through 75(4B).		

*Indicates a byte expansion follows.

Byte Expansions for ER.INOP

Offset/Field Name	Bit Pattern/ Hex Value	Contents
59(3B) RU4RSNCD		Reason code
	X'01'	Unexpected.
	X'02'	Controlled.

Explicit Route Operative (NC.ER.OP) RU

Request Format

		55(37) RU4ERCMD Request code X'0F'
56(38) Reserved	58(3A) RU4RUFC Format code X'01'	59(3B) Reserved
60(3C) RU4ORGSA Originating subarea (right justified)		
64(40) RU4ADJSA Adjacent subarea address on other end of TG. (right justified)		
68(44) RU4TGN TG number of operative TG.	69(45) RU4CNTSA Number of subareas affected	70(46) RU4ASA Affected subarea (right justified)
72(48) RU4ASA (cont.) Affected subarea (right justified)		74(4A) RU4ERNM Mask of affected ER numbers.
75(4C)-n Groups of six bytes with each group having information similar to that in Bytes 70(46) through 75(4B)		

Explicit Route Test (NC.ER.TEST) RU

Request Format

			55(37) RU4ERCMD Request code X'09'
56(38) Reserved		58(3A) RU4RUFC Format code X'01'	59(3B) Reserved
60(3C) RU4ERL ER length.	61(3D) RU4MERL Maximum ER length.	62(3E) RU4RQDSA Destination subarea. (right justified)	
64(40) RU4RQDSA (cont.) Destination subarea.		66(42) Reserved	67(43) RU4DERN Destination ERN (. . . . xxxx)
68(44) RU4RQOSA Request origination subarea. (right justified)			
72(48) RU4RERNM Reverse ERN mask.		74(4A) RU4MPS X'0000'	
76(4C) Reserved		78(4E) RU4SCPSA Subarea portion of originating SSCP network address.	
80(50) RU4SCPSA (cont.) Subarea portion of originating SSCP network address.		82(52) RU4SCPEA Element address portion of originating SSCP network address.	
84(54)–93(5D) RU4RCF Time-of-day stamp (correlates request with reply)			

Explicit Route Test Reply (NC.ER.TEST.REPLY) RU

Request Format

			55(37) RU4ERCMD Request code X'0A'
56(38) Reserved		58(3A) RU4RUFC Format code X'01'	59(3B) RU4TRTF* Type field.
60(3C) RU4ERL ER length.	61(3D) RU4MERL Maximum ER length.	62(3E) RU4RQDSA Destination subarea. (right justified)	
64(40) RU4RQDSA (cont.) Destination subarea.		66(42) Reserved	67(43) RU4DERN Destination ERN (.... xxxx)
68(44) RU4RQOSA Request origination subarea. (right justified)			
72(48) RU4RERNM Reverse ERN mask.		74(4A) RU4MPS X'0000'	
76(4C) X'0000'		78(4E) RU4SCPSA Subarea portion of originating SSCP network address.	
80(50) RU4SCPSA (cont.) Subarea portion of originating SSCP network address.		82(52) RU4SCPEA Element address portion of originating SSCP network address.	
84(54)–93(5D) RU4RCF Time-of-day stamp (correlates request with reply)			
		94(5E) RU4RBSA Subarea address of reply builder.	
96(60) RU4RBSA (cont.) *Subarea address of reply builder.*		98(62) RU4OTGSA* Subarea address on other end of TG.	
100(64) RU4OTGSA (cont.) Subarea address on other end of TG.		102(66) RU4TRTGN Test reply TGN.	

*Indicates a byte expansion follows.

Byte Expansions for Explicit Route Test Reply

Offset/Field Name	Bit Pattern/ Hex Value	Contents
59(3B) RU4TRTF		Type field
	X'00'	Test valid—destination subarea reached.
	X'02'	Route not reversible.
	X'03'	Other end of TG is a SNA 3 or SNA 4.1 node; does not support ER.
	X'04'	Maximum ER length exceeded.
	X'05'	TG not active.
	X'06'	ER not defined in the reply-building node.
98(62) RU4OTGSA	Subarea on other end of TG; depends on Type field in RU byte 4.	
	Type	*Subarea address defined*
	X'00'	Reserved
	X'02'	Subarea on ER prior to that with no reverse ER defined.
	X'03'	Subarea does not support ER and VR protocols.
	X'04'	Subarea on ER preceding the subarea where ER length (ACT ER byte 5) is incremented beyond max ER length (byte 6).
	X'05'	Subarea on other end of inactive TG.
	X'06'	Subarea on ER from which the PU (ER not defined) received corresponding NC.ER.ACT.

Explicit Route Tested (ER. TESTED) RU

Request Format

			55(37) RU4BT0 1st prefix byte-network services X'41'
56(38) RU4BT1 2nd prefix byte-maint, services X'03'	57(39) RU4RC2 Request code (ER Tested) X'86'	58(3A) Format code X'01'	59(3B) Type field*
60(3C) ER length	61(3D) Maximum ER length.	62(3E) Destination subarea. (right justified)	
64(40) (continued) Destination subarea		66(42) Reserved	67(43) Destination ERN (. . . . xxxx)
68(44) ER Test origination subarea. (right justified)			
72(48) Reverse ERN mask		72(4A) X'0000'	
76(4C) X'0000'		78(4E) Subarea portion of network address of SSCP originating ER Test request	
80(50) (continued) Subarea portion of network address of SSCP originating ER Test request.		82(52) Element address portion of network address of SSCP ER Test request.	
84(54)–93(5D) Time of day as specified on NS.ER. TEST (correlates request with reply)			
		94(5E) Subarea address of node that built NC.ER.TEST.REPLY.	
96(60) (continued) Subarea address of node that built NC.ER.TEST.REPLY.		98(62) Subarea address on other end of TG.*	
100(64) (continued) Subarea address on other end of TG.		102(66) TGN of TG between above two subareas.	

*Indicates a byte expansion follows.

Byte Expansions for Explicit Route Tested

Offset/Field Name	Bit Pattern/ Hex Value	Contents
59(3B)		Type field
	X'00'	Test valid—destination subarea reached.
	X'02'	Route not reversible.
	X'03'	Other end of TG is an SNA 3 or SNA 4.1 node; does not support ER.
	X'04'	Maximum ER length exceeded.
	X'05'	TG not active.
	X'06'	ER not defined in the reply-building node.
98(62)	Subarea on other end of TG; depends on Type field in byte 4.	
	Type	*Subarea address defined*
	X'00'	Reserved
	X'01'	Reserved
	X'02'	Previous subarea before the NC.ER.TEST.REPLY building node.
	X'03'	Next subarea after the NC.ER.TEST.REPLY building node.
	X'04'	Previous subarea before the NC.ER.TEST.REPLY building node.
	X'05'	Next subarea after the NC.ER.TEST.REPLY building node.
	X'06'	Previous subarea before the NC.ER.TEST.REPLY building node.

Free Network Address (FNA) RU

Request Format
Positive Response Format-only those fields denoted by heavy underline.

			55(37) RU1BT0 1st prefix byte-network services X'01'
56(38) RU1BT1 2nd prefix byte-physical config. services X'02'	57(39) RU1RC2 Request code (FNA) X'1A'	58(3A) RU1NA Network address of link or of physical unit.	
60(3C) RU1DRNUM Number of network addresses freed.	61(3D) Type: X'80' noncontiguous.	62(3E)–n Network addresses to be freed. (2 bytes each.)	

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense	58(3A) 2nd byte of user sense	59(3B) RU1BT0 1st prefix byte-network services X'01'
60(3C) RU1BT1 2nd prefix byte-physical config. services X'02'	61(3D) RU1RC2 Request code (FNA) X'1A'		

Initialization Complete RU

Request Format

			55(37) Request code X'50'
56(38) X'09'	57(39) Scanner enable error.	58(3A) Buffer size.	59(3B) Initial free buffer count. (Byte 1)
60(3C) Initial free buffer count. (Byte 2)	61(3D) Slowdown buffer threshold.		

Inoperative (INOP) RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'81'	58(3A) Local link identifier for the failing resource.	
60(3C) RU1IOT* Inoperative type.	61(3D) X.21 call progress signals.**		

*Indicates that a byte expansion follows.

** Only included when Inoperative type is 'X0F'.

Inoperative (INOP) RU

Byte Expansion for INOP.

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
60(3C) RU1IOT		Inoperative type.
	X'01'	Resource failed.
	X'02'	Link failed.
	X'03'	Disconnect (DISC).
	X'04'	Request Disconnect (RD).
	X'05'	Disconnect Mode (DM).
	X'06'	IPL/Dump attempt.
	X'07'	Remote Power—OFF attempt.
	X'0A'	X.21 negative call-progress signal (CPS) received but not stored.
	X'0B'	X.21 DCE clear in call-establish phase.
	X'0C'	X.21 time-out in call-establish phase.
	X'0D'	X.21 DCE clear in data phase.
	X'0E'	X.21 DCE not in ready state.
	X'0F'	X.21 negative call-progress signal (CPS) received.

IPL Final (IPLFINAL) RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'05'	58(3A) Local link station identifier of the communication controller being loaded.	
60(3C) 4-byte NCP address to be given control. (Last 20 bits of the 4-byte field.)			

IPL Initial (IPLINIT) RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'03'	58(3A) Local link station identifier of the communication controller being loaded.	

IPL Text (IPLTEXT) RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'04'	58(3A) Local link station identifier of the link-attached communication controller.	
60(3C)—n Load module text			

Lost Control Point (LCP) RU

Request Format

			55(37) Network services X'41'
56(38) Physical configuration services X'02'	57(39) Request code X'87'	58(3A) Reason code*	59(3B) Reserved
60(3C) Reserved			
64(40) Network address of the lost control point (SSCP).			

*Indicates that a byte expansion follows.

Byte Expansion for NS. LCP

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
58(3A)		Reason code for NS.LCP generation.
	X'07'	Inoperative virtual route used by the SSCP—PU session.
	X'0A'	Forced deactivation of the SSCP—PU session.
	X'0B'	Forced deactivation of the virtual route.

Lost Subarea (NC.LSA) RU

Request Format

		55(37) RU1NCLSA Request code X'05'
56(38) Reserved	58(3A) RU1LSRSN* Lost subarea reason code.	59(3B) RU1LSFMT Format X'01'
60(3C) Reserved	62(3E) RU1ONA NCP physical services network address.	
64(40) Reserved	66(42) RU1SAL Subarea lost	67(43) Reserved
68(44)-n Additional four-byte fields in format of bytes 64(40) through 67(43) for remaining lost subareas.		

*Indicates a byte expansion follows.

Lost Subarea (NS.LSA) RU

Request Format

<table>
<tr><td colspan="3"></td><td>55(37)
RU1BT0
1st prefix byte-
network services
X'01'</td></tr>
<tr><td>56(38)
RU1BT1
2nd prefix byte-
physical config.
services
X'02'</td><td>RU1RC2
Request code
X'85'</td><td>58(3A)
RU1LSRSN*
Lost subarea
reason code.</td><td>59(3B)
RU1LSFMT
Format
X'01'</td></tr>
<tr><td colspan="2">60(3C)
Reserved</td><td colspan="2">62(3E)
RU1ONA
NCP physical services
network address.</td></tr>
<tr><td colspan="2">64(40)
Reserved</td><td>66(42)
RU1SAL
subarea lost.</td><td>67(43)
Reserved</td></tr>
<tr><td colspan="4">68(44)-n
Additional four-byte fields
in format of bytes 64(40) through
67(43) for remaining lost subareas.</td></tr>
</table>

*Indicates a byte expansion follows.

Byte Expansions for Lost Subarea

Offset/Field Name	Bit Pattern/ Hex Value	Contents
58(3A) RU1LSRSN		Lost subarea reason code.
	X'01'	Physical outage.
	X'02'	Node disconnected.

Record Formatted Maintenance Statistics (RECFMS) RU

Request Format – *See Section 18. Record Formatted Maintenance Service (RECFMS) Request/Response Unit (RU) Formats.*

Record Maintenance Statistics (RECMS) RU

Request Format – *See Section 17. Record Maintenance Service (RECMS) Request/Response Unit (RU) Formats.*

Record Test Data (RECTD) RU

Request Format

			55(37) RU1BT0 1st prefix byte-network services X'01'
56(38) RU1BT1 2nd prefix byte-Physical maintenance service. X'03'	57(39) RU1RC2 Request code (Record Test Data) X'82'	58(3A) RU1NA Destination resource ID.	
60(3C) RU1CMD Command. (See note 1)	61(3D) RU1MOD Command modifier. (See note 1)	62(3E) RU1SYSSR System response. (See note 2)	63(3F) RU1LINR Line response (See note 2)

Notes:

1. *See BTU for a list of the applicable commands. See Section 3 for a description of the BTU commands and modifiers.*
2. *See Section 8 for the system responses and line responses. The line responses are also referred to as extended responses.*

Record Test Results (RECTR) RU

Request Format

		55(37) RU1BT0 1st prefix byte- network services X'41'
56(38) RU1BT1 2nd prefix byte- maint. services X'03'	57(39) RU1RC2 Request code (Record Test Results) X'85'	58(3A) RU1NA Local link station identifier.
60(3C) RU1PRID Procedure identification.		62(3E) RU1I Link-test record indicator. X'8100'
64(40) RU1TFT Test-frames transmitted counter.		66(42) RU1TTFR Test-frames received with/without errors counter.
68(44) RU1TFR Test-frames received without errors counter.		70(46) RU1STAT* Test termination status.

*Indicates a byte expansion follows.

Byte Expansions for RECTR

Offset/Field Name	Bit Pattern/ Hex Value	Contents
70(46) RU1STAT	 X'0000' X'0001' X'0002' X'0003'	Test termination status Ended without errors. Ended with errors. Ended by link inoperative. Test initialization failure.

Record Trace Data (RECTRD) RU

Request Format

			55(37) RU1BT0 1st prefix byte-network services X'01'
56(38) RU1BT1 2nd prefix byte-physical maint. services X'03'	57(39) RU1RC2 Request code (Record Trace Data) X'83'	58(3A) RU1NA Local link identifier of the link on which line trace is active. Network address of the NCP PU when Type = GPT.	
60(3C) RU1WT* Trace type	61(3D) RU1TM Time stamp for an active trace. Reserved if Type = GPT.	62(3E) RU1SCA Subchannel address for EP line. Count byte from ACTTRACE Reserved if Type = GPT.	63(3F) RU1RTT* Type of record-trace data requested.
64(40) RU1ECNT Length of each status entry.		66(42)-n RU1RTD Trace entries — each is either a status entry or a data entry.	

*Indicates a byte expansion follows.

Byte Expansion for RECTRD

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) RU1WT		Trace type
	00 . . 0101	CSP character mode line trace.
	00 . . 1001	CSP normal mode line trace.
	00 . . 1101	Scanner interface trace (SIT.)
	. . xx	Reserved.
	01	Generalized PIU trace (GPT.)
	10	Internal PIU trace (IPT.) (Includes TG trace).

Byte Expansions for RECTRD

Offset/Field Name	Bit Pattern/ Hex Value	Contents
63(3F) RU1RTT		Type of Record Trace Data requested:
	x...	Line type 1=Duplex 0=Half-duplex
	.x..	If bit 0=1 (duplex) 1=Transmit leg 0=Receive leg.
	..xx	Reserved
	.... .x..	SDLC line trace (duplex only) 1=Secondary link 0=Primary link
	.... 0.01	This is not the last Record Trace Data request.
	0.10	This is the last Record Trace Data request because a Deactivate Trace has been received.
	.... 0.11	This is the last Record Trace Data request because line trace has been terminated due to slowdown or because the line has run out of free level 2 line trace buffers.
	.... 1.10	This is the last Record Trace Data request because a CSP resource is unavailable for a SIT.
	1.11	This is the last Record Trace Data request because of a CSP hardware error for a SIT.

Record Storage (RECSTOR) RU

Request Format

		55(37) RU1BT0 Network services X'01'
56(38) RU1BT1 Physical configuration services X'03'	57(39) RU1RC2 Request code X'34'	58(3A) RU1STNA Network address of the resource to be displayed.
60(3C) RU1STYPE Display type (RECSTOR) X'34'	61(3D) Reserved	62(3E) RU1SLENG Number of bytes of program storage following in this record.
64(40) Location of beginning of display.		
68(44)-n Storage display.		

Remote Power Off (RPO) RU

Request Format

		55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'09'	58(3A) Local link station identifier of the link-attached communication controller.

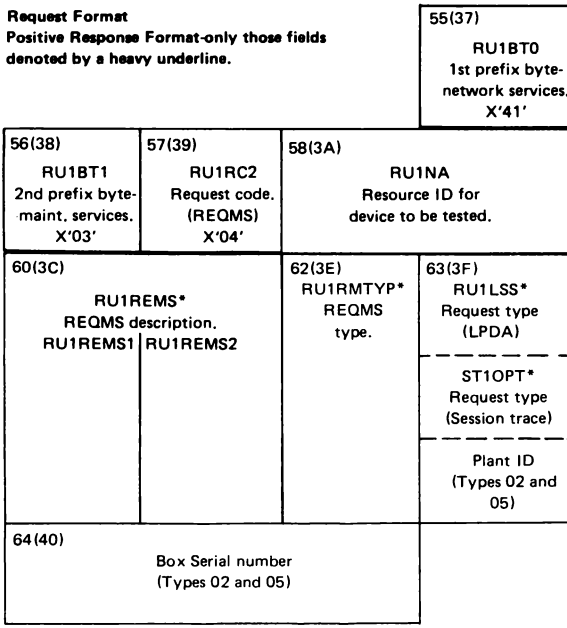
Request Contact (REQCONT) RU

Request Format

		55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'84'	58(3A) Network address of the link.
60(3C)–65(41) Station ID. (Acquired with the XID SDLC command)		

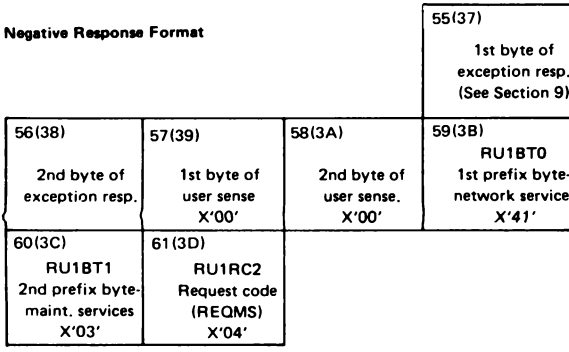
Request Maintenance Statistics (REQMS) RU

Request Format
Positive Response Format-only those fields denoted by a heavy underline.



*Indicates a byte expansion follows.

Negative Response Format



Byte Expansions for REQMS

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) RU1REMS	Byte 0	REQMS description.
	xx..	Reserved.
	..xx	Resource ID description.
	xxxx	
	Byte 1	Procedure-related identifier.
	xxxx xxxx	
62(3E) RU1RMTYP		REQMS type.
	1...	Solicitation indicator.
	.1..	Not last request indicator.
	..00 0010	Summary error data.
	..00 0100	Session trace.
	..00 0101	EC change level.
	..00 0110	LPDA
63(3F) RU1LSS		LPDA request type.
	X'02'	Request link status.
	X'03'	Request remote DTE interface status.
ST1OPT		Session trace request type.
	X'01'	Trace data request.
	X'02'	Enable Trace request for a specific resource.
	X'03'	Inhibit Trace request for a specific resource.
	X'04'	Enable Trace request for all resources.
	X'05'	Inhibit Trace request for all resources.

Request Network Address Assignment (RNAA) RU

Request Format

			55(37) RU1BT0 1st prefix byte-network services. X'41'
56(38) RU1BT1 2nd prefix byte-physical config. services. X'02'	57(39) RU1RC2 Request code. (RNAA) X'10'	58(3A) RU1NA Network address of resource to which addresses are to be assigned.	
60(3C) RU1IND* Pool type.	61(3D) RU1DRNRQ Number of addresses being requested.	62(3E) RU1DRVI Reserved	47(2F) SDLC address (addressing char) of PU being requested or local address of LU being requested.
64(40) thru n Remaining SDLC or local addresses (if any). (2 bytes for each address in the same format as RU1DRV1)			

Positive Response Format

			55(37) RU1BT0 1st prefix byte-network services. X'41'
56(38) RU1BT1 2nd prefix byte-physical config. services. X'02'	57(39) RU1RC2 Request code. (RNAA) X'10'	58(3A) RU1NA Network address of resource to which addresses are to be assigned.	
60(3C) RU1IND* Pool type.	61(3D) RU1DRNRQ Number of network addresses assigned.	62(3E) thru n RU1DRVI Assigned network addresses.	

*Indicates a byte expansion follows.

Request Network Address Assignment (RNAA) RU (Continued)

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense. (See Section 9)	58(3A) 2nd byte of user sense.	59(3B) RU1BT0 1st prefix byte-network services. X'41'
60(3C) RU1BT1 2nd prefix byte-physical config. services. X'02'	61(3D) RU1RC2 Request code. (RNAA) X'10'		

Byte Expansion for RNAA (Request, Positive Response)

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) RU1IND	X'00' X'01'	Pool type PU pool LU pool

Session End (SESSEND) RU

Request Format

			55(37) Network services X'81'
56(38) Session services X'06'	57(39) Request code X'88'	58(3A) Format type X'20'	59(3B) Cause for deactivation note
60(3C) Action is normal X'01'	61(3D) Session key X'07'	62(3E) Network address of PLU.	
64(40) Network address of SLU.			

Note: See Unbind type for values.

Set Control Vector (SETCV), Channel Attention Delay RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'11'	58(3A) Network address of NCP physical services.	
60(3C) Control vector key X'05'	61(3D) New attention delay value in tenths of a second		

Set Control Vector (SETCV) – Intensive Mode RU

Request Format
Positive Response Format—only those fields denoted by a heavy underline.

			55(37) RU1BT0 1st prefix byte-network services X'01' or X'41'
56(38) RU1BT1 2nd prefix byte-maint. services X'03'	57(39) RU1RC2 Request code SETCV X'11'	58(3A) RU1NA Local link station identifier of the link station.	
60(3C) RU1SCV* Intensive mode indicator X'08'	61(3D) RU1SACT* SETCV action.	62(3E) RU1SIMC Maximum number of Intensive Mode Record Maintenance statistics.	

*Indicates a byte expansion follows.

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9.)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense X'00'	58(3A) 2nd byte of user sense X'00'	59(3B) RU1BT0 1st prefix byte-network services X'41'
60(3C) RU1BT1 2nd prefix byte-maint. services X'03'	61(3D) RU1RC2 Request code SETCV X'11'		

Byte Expansion for SETCV — Intensive Mode (Request)

Offset/Field Name	Bit Pattern/ Hex Value	Contents
60(3C) RU1SCV	X'08'	Intensive mode indicator on.
61(3D) RU1SACT		SETCV action.
	X'00'	Deactivate intensive mode.
	X'80'	Activate intensive mode.

Set Control Vector (SETCV), Link Backup RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'11'	58(3A) Network address of the alternate link.	
60(3C) Control vector key X'02'	61(3D) Subarea address of the controller.		

Set Control Vector (SETCV)—Logical Unit RU

Request Format
Positive Response Format—only those fields denoted by a heavy underline.

			55(37) RU1BT0 1st prefix byte-network services. X'01'
56(38) RU1BT1 2nd prefix byte-physical config. services. X'02'	57(39) RU1RC2 Request code. (SCV) X'11'	58(3A) RU1NA Network address of the logical unit.	
60(3C) RU1SSVT SETCV type = LU. X'04'	61(3D) RU1LALU Local address of the LU.	62(3E) RU1NPC N pacing count.	63(3F) RU1MPC M pacing count.
64(40) RU1PCI* Priority scheduling.			

*Indicates a byte expansion follows.

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense (See Section 9)	58(3A) 2nd byte of user sense.	59(3B) RU1BT0 1st prefix byte-network services. X'01'
60(3C) RU1BT1 2nd prefix byte-physical config. services. X'02'	61(3D) RU1RC2 Request code (SETCV) X'11'		

Byte Expansions for SETCV-LU (Request)

Offset/Field Name	Bit Pattern/ Hex Value	Contents
64(40) RU1PCI	0	Productive scheduling.
	1	Nonproductive scheduling.

Set Control Vector (SETCV)—Physical Unit RU

Request Format
Positive Response Format—only those fields denoted by a heavy underline.

55(37) RU1BT0 1st prefix byte-network services. X'01'			
56(38) RU1BT1 2nd prefix byte-physical config. services. X'02'	57(39) RU1RC2 Request code. (SETCV) X'11'	58(3A) RU1NA Network address of the physical unit.	
60(3C) RU1SSVT SETCV type = PU. X'03'	61(3D) Reserved	62(3E) RU1PUT* PU type.	63(3F) RU1PTM* PU type modifier
64(40) RU1MAX MAXOUT—max. number of PIUs sent before response required.	65(41) RU1PASS PASSLIM—max. number contiguous PIUs sent at one time.	66(42) RU1ERR Error recovery modifier. X'10'—immed. error recovery.	67(43) Reserved
68(44) Reserved	69(45) RU1SEG Maximum data segment size.		

*Indicates a byte expansion follows.

Set Control Vector, PU RU (Continued)

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense (See Section 9)	58(3A) 2nd byte of user sense.	59(3B) RU1BT0 1st prefix byte-network services. X'01'
60(3C) RU1BT1 2nd prefix byte-physical config. services. X'02'	61(3D) RU1RC2 Request code SETCV (PU) X'11'		

Byte Expansions for SETCV-PU (Request)

Offset/Field Name	Bit Pattern/ Hex Value	Contents
62(3E) RU1PUT	 X'02' X'04'	PU type. PU type 2. PU type 1.
63(3F) RU1PTM	 x. . . .x . .	PU type modifier. If RU1PUT = X'04' (PU type 1), 1 = Transmission subsystem profile 2 (SDLC 3270). 0 = Not TS profile 2. If RU1PUT = X'02' (PU type 2) x = Reserved. 1 = Continue poll after ANS. 0 = Stop poll after ANS.

Set Control Vector (SETCV)—Time and Date RU

Request Format

			55(37) Network services X'01'
56(38) Physical configuration services X'02'	57(39) Request code X'11'	58(3A) Network address of the NCP physical services.	
60(3C) Control vector X'01'	61(3D)–80(50) Date (12 bytes) and time (8 bytes)*		

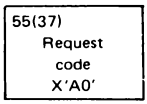
*Indicates that a byte expansion follows.

Byte Expansion for SETCV—Time and Date

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
61(3D)		Date (12 bytes) MM/DD/YY.ddd
	MM	Month (2 digits).
	DD	Day (2 digits).
	YY	Year (2 digits).
	ddd	Day of year (3 digits).
		Time (8 bytes) hh.mm.ss
	hh	Hour (2 digits).
	mm	Minutes (2 digits).
	ss	Seconds (2 digits).

Start Data Traffic (SDT) RU

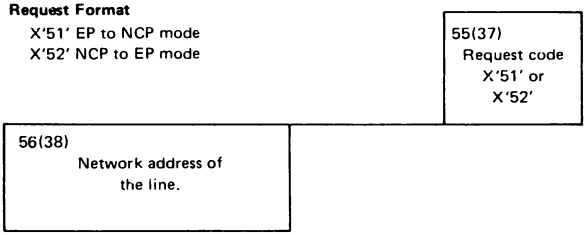
Request/Response Format



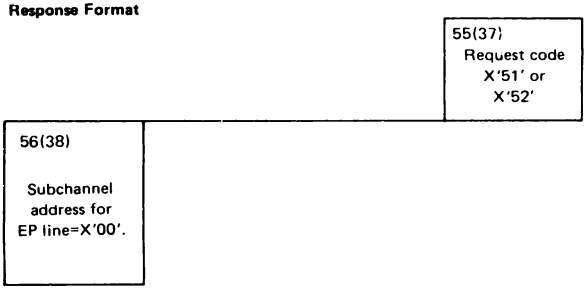
Switch Line Mode to NCP/EP RU (BSC/SS only)

Request Format

X'51' EP to NCP mode
X'52' NCP to EP mode



Response Format



Test Mode (TM) RU

Request Format
Positive Response Format-only those fields denoted by a heavy underline.

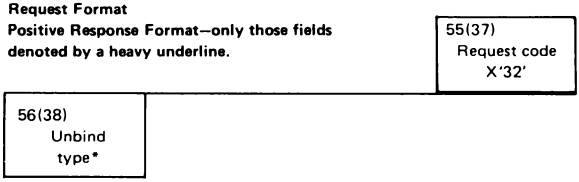
			55(37) RU1BT0 1st prefix byte-network services. X'41'
56(38) RU1BT1 2nd prefix byte-maint. services. X'03'	57(39) RU1RC2 Request code (Test Mode) X'05'	58(3A) RU1NA Network address of the resource to be tested.	
60(3C) RU1PRID Procedure identification		62(3E) RU1I Link-test request indicator. X'0100'	
64(40) RU1TFRQ Number of test-frame transmission requested.		66(42) RU1TFMR Number of test-frame transmissions requested each time receiving station is serviced. (multipoint lines only)	
68(44) thru n RU1DATA Test data sent in the information field of the test frame. Default: data support in the access method.			

Negative Response Format

			55(37) 1st byte of exception resp. (See Section 9)
56(38) 2nd byte of exception resp.	57(39) 1st byte of user sense X'00'	58(3A) 2nd byte of user sense. X'00'	59(3B) RU1BT0 1st prefix byte-network services X'41'
60(3C) RU1BT1 2nd prefix byte-maint. services X'03'	61(3D) RU1RC2 Request code (Test Mode) X'05'		

Unbind RU

Request Format
Positive Response Format—only those fields denoted by a heavy underline.



*Indicates a byte expansion follows.

Byte Expansions for Unbind

Offset/Field Name	Bit Pattern/ Hex Value	Contents
56(38)		Unbind type
	X'01'	Normal end session.
	X'02'	Bind forthcoming.
	X'03'	Talk.
	X'04'	Restart mismatch.
	X'05'	LU not authorized.
	X'06'	Invalid session.
	X'07'	Virtual route inoperative. (VR.INOP)
	X'08'	Route extension inoperative. (REX.INOP)
	X'09'	Restart or take over.
	X'0A'	SSCP deactivated.
	X'0B'	LU-LU session deactivated.
	X'0C'	Failure (not NCP).

Section 6. SDLC Commands and Responses

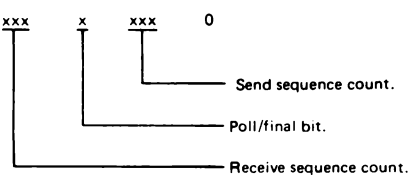
Nonsequenced Format: (Bits 6, 7 = 11)

Commands	Control Field Binary	Hex	Function
Requests			
Set Initialization Mode (SIM).	0001 0111	17	Initiates system-specified procedures at the receiving secondary station for the purpose of initializing link-level functions.
Disconnect (DISC).	0101 0011	53	Terminates other modes and places the receiving secondary station effectively offline.
Set Normal Response Mode (SNRM).	1001 0011	93	Subordinates the receiving secondary station to the transmitting primary station.
LPDA Test	0001 1011	1B	Link Problem Determination Aid (LPDA) test command.
Exchange Identification (XID).	1011 1111	BF	Used by the NCP to solicit the station identification from a secondary station.
Test	1111 0011	F3	SDLC Test command.
Responses			
Request Initialization Mode (RIM)	0001 0111	17	Notifies the primary station that the secondary station has a need for a SIM command.
Disconnect Mode (DM)	0001 1111	1F	Indicates that the transmitting secondary station is disconnected or the reset configurable station has received an XID.
Request Disconnect (RD)	0101 0011	53	Notifies the primary station that the secondary station has a need for a DISC command.
Unnumbered Acknowledgment (UA).	0111 0011	73	Affirms a response to a SNRM or SIM command.
Frame Reject (FRMF).	1001 0111	97	Rejects an invalid command.

Supervisory Format: (Bits 6, 7 = 01)

Commands	Control Field	Function
Receive Ready (RR)	xxxx 0001	Indicates the originating station is ready to receive.
Receive Not Ready (RNR)	xxxx 0101	Indicates a temporary busy condition in which no frames requiring buffer space can be accepted.
Reject (REJ)	xxxx 1001	Requests transmission or retransmission of sequenced information.
	xxxx 1101	Reserved
	xxxx Poll/final bit Receive sequence count.	

Information Format: (Bit 7 = 0)



Section 7. EP Command Codes

Operation Code		
EP**	S/370	Command
0000 0...	00	Test I/O
0000 1...	01	Write
0001 0...	02	Read
0001 1...	03	I/O No-op
0001 1...	12	Diagnostic Read*
0001 1...	05	Diagnostic Write*
0001 1...	13	Set Address Zero*
0001 1...	17	Set Address One*
0001 1...	1B	Set Address Two*
0001 1...	1F	Set Address Three*
0001 1...	1D	Diagnostic Poll*
0010 0...	04	Sense
0010 1...	15	Wrap
0011 0...	06	Prepare
0100 0...	41	Write Break
0100 1...	09	Poll
0101 0...	0A	Inhibit
0101 1...	19	Poll SOH
0110 0...	42	Read Clear
0110 1...	0D	Break
0111 0...	0E	Search
0111 1...	2F	Disable
1000 0...	27	Enable
1000 1...	29	Dial
1001 0...	1E	Address Prepare
1001 1...	23	Set Mode
Flags used during initial command execution (ICE)		
.1..		End with intervention required instead of command reject.
..1.		Sense command
...1		Line must be enabled before this is accepted.
Flags used after ICE		
.... .1..		Command end
.... ..1.		Pseudo read
....1		Pseudo read end

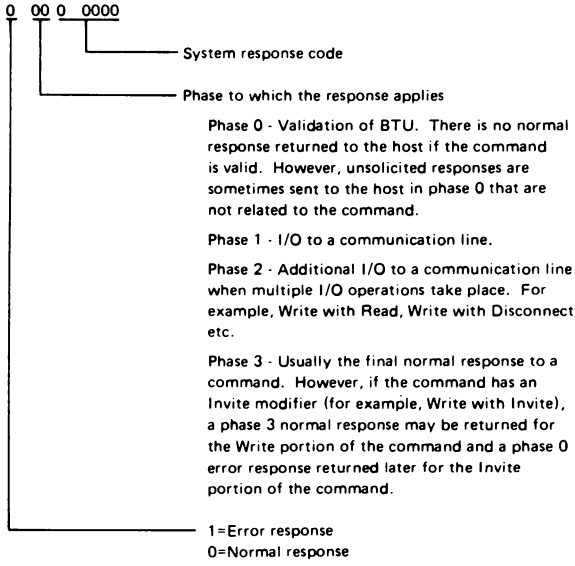
*Treated by EP as a no-op. (May be used as a dynamic dump command on a dynamic subchannel.)

**The EP command is located in the CCBCMD field of the EP CCB.

Section 8. BTU Responses

This section lists the responses that are returned to the host in the BTU. The response comprises 2 bytes: system response (BCUSRES) and extended response (BCULRES). The extended response is also referred to as the line response.

System Response Byte



Summary of BTU Responses

Command & Modifier	Phase 0* Error	Phase 1 Error	Phase 1 Normal	Phase 2 Error	Phase 2 Normal	Phase 3 Normal
Invite Normal (I)	Any part	I	I			I(final)
Invite Block (Ib)	Any part	I				Ib
Invite Message (Im)	Any part	I	I			Im
Invite Transmission (It)	Any part	I	I			It
Invite Transmission with Disconnect (Id)	Any part	I	I	D		Id
Invite with Auto Restart (Ia)	Any part	I	I	D		Ia
Invite perpetual (Ip)	Any part	I	I or R			It or Rt
Disconnect Normal (D)	Any part	D				D
Disconnect with End of Call (De)	Any part	D				De
Disconnect with Invite (DI)	Any part	D I	I			D/I(final)
Disconnect with EOC and Invite (De)	Any part	D I	I			D/I(final)
Write normal (W)	Any part	W				W
Write with End of Message (Wm)	Any part	W				Wm
Write with End of Transmission (Wt)	Any part	W		Wt		Wt
Write with Disconnect (Wd)	Any part	W		D		Wd
Write with Invite (Wi)	Any part	W/I	I	D		Wd/I(final)
Write with Read (implied EOT) (Wr)	Any part	W		Wt/R	Wt/R	R (final)
Write with Contact (Wc)	Any part	C/W				Wc
Write with Contact (implied ETX) (Wcm)	Any part	C/W				Wcm
Write with Contact (implied EOT) (Wct)	Any part	C/W		Wt		Wct
Write with Contact and Disconnect (implied ETX and EOT) (Wcd)	Any part	C/W		D		Wcd
Write with Contact and Read (Wcr)	Any part	C/W		Wt/R	Wt/R	R(final)
Read Normal (R)	Any part	R	R			R(final)
Read Block (Rb)	Any part	R				R(final)
Read Message (Rm)	Any part	R	R			Rm
Read Transmission (Rt)	Any part	R	R			Rt
Read Transmission Disconnect (Rd)	Any part	R	R	D		Rd
Read with Invite (Ri)	Any part	R/I	R/I	D		Rd/I(final)
Contact (C)	Any part	C				C

*Phase 0 error responses can be returned for any portion of a BTU on which there is a validity error.

Notes:

- See Section 3 for the meanings and symbols for the commands and modifiers.
- Explanation of chart using the 'Write with Contact and Read' command and modifier:
  - Phase 0 error; 'Any part' means the error can occur during the contact, Write with EOT, or Read; See 'Phase 0 Error Responses' table for details.
    Phase 1 error; C/W means the error can occur during contact or Write with EOT; See 'Phase 1, 2, and 3 Error Responses' table for details.
    Phase 2 error; Wt/R means the error can occur during Write with EOT or Read; See 'Phase 1, 2, and 3 Error Responses' table for details.
    Phase 2 normal; Wt/R means the normal response can occur during Write with EOT or Read; See 'Phase 1, 2, and 3 Normal Responses' table for details.
    Phase 3 normal; response during Read; See 'Phase 1, 2, and 3 Normal Responses' for details.
- Diagnostic aid example using the "Write with Disconnect" command and modifier:
  X'02 03 A0' example: A0 in phase 1 column of 'Phase 1, 2, and 3 error Responses' leads you to 'Phase 1 error' column of the Summary of BTU Responses Table.
  The W, at the intersection with the "Write with Disconnect" (X'0203'), indicates the error occurred during the Write.

Phase 0 Error Responses

Response (hex)	Meaning
81	Invalid resource ID.
82	Invalid command.
83	Invalid modifier.
84	Reset or Deactivate in progress.
85	Device inactive.
86	Line inactive.
87	Command not valid for resource.
88	Command syntax error.
89	Command rejected, did not conform to BSC specifications.
8A	Invalid control data length.
8B	Reset not performed.
8C	Data not resident in storage.
8D	Dial set queue limit reached.
8E	Line and device incompatibility on switched call-out.
8F	Invalid text length.
91	Invalid control data.
92	Incomplete BTU.
93	Command rejected because of error on one or more of the devices.
94	Data in use.
95	Invalid Control command modifier or Control command not valid for resource.
96	OLTT command rejected, queue not empty.
97	OLT active. Non-OLT command rejected.
98	Multiple dial requests.
99	Mode inconsistency. (Request was made to alter the mode of a resource, but the resource was already in that mode.)
9A	Buffers required to complete the operation are not available; system in slowdown mode.
9B	Command rejected, system in auto network shutdown.
9C	Command rejected, error lock set.
9D	Command rejected, resource not available.
9E	Command rejected, line deactivated or command reset.
9F	Refer to conditional extended responses.

Phase 0 Unsolicited Responses

Response (hex)	Meaning
00	Invalid bit configuration.
02	Control mode reset, EOT not received.
03	Device association completed.
04	MTA device identified.
0A	RECMS records accompany the BTU.
1D	PLU-device session terminated by ANS.
1E	Serviceability aid—host logging.

Phase 1, 2, and 3 Error Responses

Response (hex)			
Phase 1	Phase 2	Phase 3	Meaning
A0	C0	E0	Data check.
A1	C1	E1	Possible intervention required.
A2	C2	E2	Intervention required.
A3	C3	E3	Negative poll limit reached—WAIT option.
A4	C4	E4	Yielded to contention.
A5	C5	E5	Device error—BSC status pending.
A6	C6	E6	ID Error
A7	C7	E7	Line trace terminated due to error.
A8	C8	E8	Test command or Reset On-Line Terminal Test command processing terminated.
A9	C9	E9	Session not started due to hardware error.
AA	CA	EA	BSC error status message.
AB	CB	EB	General poll operation aborted due to error.
AC			Fanout backup limit exceeded.
	CC	EC	Disconnected.
B3	D3	F3	Break received on this block.
B8	D8	F8	Contact rejected—session started.
B9	D9	F9	Dial data inconsistency.
BA	DA	FA	Buffers required to complete operation are not available.
BE	DE	FE	Command rejected, line deactivated or command reset.

Phase 1, 2, and 3 Normal Responses

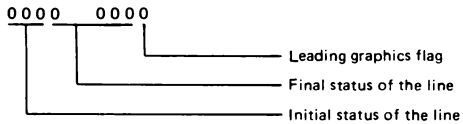
Response (hex)			
Phase 1	**Phase 2**	**Phase 3**	**Meaning**
20	40	60	Command executed OK this far. (Pertains to all commands not represented by 22, 42, or 62.)
21	41	61	Leading graphics received.
22	42	62	One of the following commands executed OK this far: • Read or Invite • Write (in conversational mode). • WR or WCR commands in the read phase.
23	43	63	Negative poll limit reached—QUEUE option (NCP generation).
24	44	64	OLTT request message.
25	45	65	BSC status message.
26	46	66	Negative poll limit reached—NOWAIT option (NCP generation).
27	47	67	Line trace output.

The following responses occur when the line is in monitor mode:

Response (Hex)	**Meaning**
EC	Disconnect received
ED	IPL required
EE	Permanent trunk error
EF	Block from queue caused an abnormal condition.

Extended Response Byte

The extended response byte contains either a normal extended response or a conditional extended response. The normal extended response appears in both BCULRES and the second byte of IOBSTAT. It has the following format.



A conditional extended response applies to one specific system response and does not have a fixed format. It appears only in BCULRES.

The following extended response definitions apply only if an input/output operation is involved.

Extended Responses

Initial Status

000.	Control mode.
001.	Text mode.
010.	Transparent text mode (BSC only).
011.	Heading mode (BSC only).
100.	Special.
111.	Hardware/user error.

Normal Final Status when Initial Status = Control, Text, Transparent Text, or Heading

. . .0 000.	Time-out – Some character(s) have been received, but may not be stored (Control mode).
. . .0 010.	Cutoff – This bit indicates that a controlled length field (for example, an ID field) was too long and was cut off at the end of the correct length.
. . .0 011.	Reply to transmitted data was an ENQ – transmission is aborted.
. . .0 100.	An EOT was received on a block that began without an STX, SOH, or (D), ie., text received in control mode.
. . .0 101.	End of DLE control (BSC only).
. . .0 110.	Wrong ACK – ACK1 received when ACK0 was expected, or ACK0 was received when ACK1 was expected.
. . .0 111.	For start-stop, NAK returned in response to a selection, poll, write, or NAK reply to text. For BSC, an EOT returned in response to a selection, poll, or write.

Normal Final Status when Initial Status = Control, Text, Transparent Text, or Heading (Continued)

...1 000.	Received sub-block.
...1 001.	End of text.
...1 010.	End of block.
...1 011.	Data or leading graphics received with an ENQ, or ENQ by itself.
...1 100.	EOT received with no errors.
...1 101.	Reverse interrupt.
...1 110.	Positive ACK returned and no errors indicated on a write operation.
...1 111.	WACK received (could be an error condition).

Final Status when Initial Status = Special

...0 000.	Time-out with nothing received.
...0 001.	Command reject – should not occur error – set by the communications scanner code.
...0 010.	Level 2 and level 3 buffer pools depleted – level 5 may still have buffers left. When this bit is on, data is lost.
...0 011.	Selected (BSC tributary only).
...0 100.	Received disconnect signal on TWX or DLE/EOT on BSC.
...0 101.	Data was received when it was not expected.
...0 110.	A reset occurred.
...0 111.	The device has been polled.
...1 000.	Transmitted sub-block.
...1 001.	An EOT was sent after a specified number of WACKs were received in response to a request or operation.
...1 010.	Received break in text (two consecutive stop-bit errors). The last two characters stored are invalid. They may be incorrect length control characters or all spaces.
...1 011.	Polling stop – Device was polled to the polling limit and responded negatively, or a Read Initial with a single polling modifier was directed to a polled line.
...1 100.	EOT transmitted.
...1 101.	Received a break signal while transmitting.
...1 110.	Disconnected.
...1 111.	Connected.

Final Status when Initial Status = Hardware/User Error

...0 000.	User error (MTA support), normally indicates an incorrect NCP generation.
...0 001.	Clear-to-send dropped during a transmit operation.
...0 010.	Backup timer expired because a scanner was down.
...0 011.	SDLC transmit underrun limit exhausted.
...0 100.	Communications line adapter check—Occurs whenever a level 2 interrupt (not dependent on an external source) is expected and not received. For example, after starting to transmit, a level 2 interrupt is expected. If none is returned, the internal clock should be suspected of not working properly.
...0 110.	Scanner hardware failure.
...0 111.	Data-set-ready dropped during command.
...1 000.	Modem error — Comes on with the modem check bit in the SCF field of the PSA. Not used for single current telegraph.
...1 001.	Modem transmit clock or clear-to-send error — Comes on when in the transmit mode and the first character cannot be transmitted. Indicates an external clock error.
...1 010.	DSR-on check — For leased lines, comes on if data-set-ready doesn't come up within three seconds after data-terminal-ready.
...1 011.	Cable not installed.
...1 100.	DSR-off check — For switched lines, comes on if data-set-ready doesn't drop within 3 seconds of data-terminal-ready.
...1 110.	ACU check — No response was received from an ACU when one was expected. If this bit is on, check that the NCP generation parameter that sets the auto-call time-out contains a greater value than the time-out duration in the ACU.
...1 1111	Program failure.

Leading Graphics Flag

....1	Leading graphics received.

Conditional Extended Responses

Extended Response when System Response = X'9F'

X'82'	Change-speed command is invalid for the line.
X'83'	Specified line is unavailable.
X'84'	Error lock.
X'E0'	Switch-line-mode command was received but line not generated as mode-switchable.
X'E1'	Switch-line-mode command was received but a command is already executing on the line or line trace is active on the line.

Section 9. NCP Exception Responses

Exception responses are identified by RH byte 0, bit 5. If this bit is on, the RU is displaced 4 bytes to make room for sense data. The first 2 bytes (bytes 0 and 1) contain the exception response code. The second 2 bytes (bytes 2 and 3) contain user-specified sense information. *See Advanced Communications Function for Network Control Program for the IBM 3725 Diagnosis Reference,* LY30-3071 for more details on exception responses and user sense data.

Label	Exception Response Code	Meaning
	X'0064'	User sense data: invalid BSC device.
	X'0065'	User sense data: inactive BSC device.
SNS81	X'0801'	Request reject: resource not available.
SNS82	X'0802'	Request reject: intervention required.
SNS83	X'0803'	Request reject: missing password.
SNS84	X'0804'	Request reject: invalid password.
SNS85	X'0805'	Request reject: session limit exceeded.
SNS86	X'0806'	Request reject: resource unknown.
SNS87	X'0807'*	Request reject: resource not available.
SNS88	X'0808'*	Request reject: invalid contents ID.
SNS89	X'0809'	Request reject: mode inconsistency.
SNS8A	X'080A'	Request reject: permission rejected.
SNS8B	X'080B'*	Request reject: bracket race error.
SNS8C	X'080C'	Request reject: function not supported.
SNS8D	X'080D'*	Request reject: NAU contention.
SNS8E	X'080E'	Request reject: LU not authorized.
SNS8F	X'080F'	Request reject: end user not authorized.
SNS90	X'0810'	Request reject: missing requestor ID.
SNS91	X'0811'	Request reject: break.
SNS92	X'0812'	Request reject: insufficient resource.
SNS93	X'0813'	Request reject: bracket bid reject-no RTR forthcoming.
SNS94	X'0814'*	Request reject: bracket bit reject-RTR forthcoming.
SNS95	X'0815'	Request reject: function active.
SNS96	X'0816'	Request reject: function inactive.
SNS97	X'0817'	Request reject: link inactive.
SNS98	X'0818'	Request reject: link procedure in progress.
SNS99	X'0819'*	Request reject: RTR not required.
SNS9A	X'081A'	Request reject: procedure error.
SNS9B	X'081B'	Request reject: receiver in transmit mode.
SNS9C	X'081C'	Request reject: function not executable.
SNSA0	X'0820'	Request reject: control vector error.
SNSA1	X'0821'	Request reject: invalid session parameters.

* These exception responses are defined in NCP but are not issued by NCP.

Label	Exception Response Code	Meaning
SNSA2	X'0822'	Request reject: link procedure failure.
SNSA3	X'0823'	Request reject: control vector key not 1, 2, 3, 4, or 5
SNSA6	X'0826'	Request reject: FM function not supported.
SNSAC	X'082C'	Request reject: share limit exceeded.
SNSB3	X'0833'	Request reject: invalid parameter.
SNSB5	X'0835'	Request reject: invalid parameter with pointer only.
SNSC0	X'0840'	Request reject: procedure invalid for resource.
SNSCB	X'084B'	Request reject: Resource not available.
SNSCD	X'084D'	Request reject: bind parameter not acceptable by boundary function.
SNSD2	X'0852'	Request reject: Control vector TOD.
SNS61	X'1001'	Request error: RU data error.
SNS62	X'1002'	Request error: RU length error.
SNS63	X'1003'	Request error: function unknown.
SNS64	X'1004'	Request error: function not supported.
SNS65	X'1005'	Request error: parameter error.
SNS67	X'1007'	Request error: category not supported.
SNS41	X'2001'	State error: sequence number.
SNS42	X'2002'	State error: chaining.
SNS43	X'2003'	State error: bracket.
SNS44	X'2004'	State error: direction.
SNS45	X'2005'	State error: data traffic not started.
SNS46	X'2006'	State error: data traffic quiesced.
SNS21	X'4001'*	RH error: invalid SC or NC RH.
SNS23	X'4003'*	RH error: BB not allowed.
SNS24	X'4004'*	RH error: EB not allowed.
SNS25	X'4005'	RH error: incomplete RH.
SNS26	X'4006'	RH error: exception not allowed.
SNS27	X'4007'	RH error: definite response not allowed.
SNS28	X'4008'	RH error: pacing not supported.
SNS29	X'4009'*	RH error: change direction not allowed.
SNS2A	X'400A'	RH error: no response not allowed.
SNS2B	X'400B'	RH error: chaining not supported.
SNS2C	X'400C'	RH error: brackets not supported.

* These exception responses are defined in NCP but are not issued by NCP.

Label	Exception Response Code	Meaning
SNS01	X'8001'	Path error: intermediate node failure.
SNS02	X'8002'	Path error: link failure.
SNS03	X'8003'	Path error: LU inoperative.
SNS04	X'8004'	Path error: unrecognized DAF.
SNS05	X'8005'	Path error: no session.
SNS06	X'8006'	Path error: invalid FID.
SNS07	X'8007'	Path error: segmentation not supported.
SNS08	X'8008'*	Path error: PU not active.
SNS09	X'8009'*	Path error: LU not active.
SNS0A	X'800A'	Path error: PIU too long for an INN link.
SNS0B	X'800B'	Path error: incomplete TH.
SNS0C	X'800C'	Path error: DCF error.
SNS0D	X'800D'	Path error: lost contact.
SNS11	X'8011'	Path error: route error.
SNS12	X'8012'	Path error: wrong VR.

* These exception responses are defined in NCP but are not issued by NCP.

Section 10. 3725 Instruction Set

Instruction	Format Code	Mnemonic	Operand Field Format
Adapter Input/Output	RR	IOH	R1,R2
Adapter Input/Output Immediate	RI	IOHI	R,I
Add Character Register	RR	ACR	R1(N1), R2(N2) @
Add Halfword Register	RR	AHR	R1,R2
Add Register	RR	AR	R1,R2 #
Add Register Immediate	RI	ARI	R(N), I @
And Character Register	RR	NCR	R1(N),R2(N2)
And Halfword Register	RR	NHR	R1,R2
And Register	RR	NR	R1,R2 #
And Register Immediate	RI	NRI	R(N),I
Branch	RT	B	T
Branch and Link	RA	BAL	R,A †
Branch and Link Register	RR	BALR	R1,R2
Branch on Bit	RT	BB	R(N,M),T
Branch on Count	RT	BCT	R(N),T
Branch on C Latch	RT	BCL	T
Branch on Z Latch	RT	BZL	T
Compare Character Register	RR	CCR	R1(N1),R2(N2)
Compare Halfword Register	RR	CHR	R1,R2
Compare Register	RR	CR	R1,R2 #
Compare Register Immediate	RI	CRI	R(N), I
Exclusive Or Character Register	RR	XCR	R1(N1),R2(N2)
Exclusive Or Halfword Register	RR	XHR	R1,R2
Exclusive Or Register	RR	XR	R1,R2 #
Exclusive Or Register Immediate	RI	XRI	R(N), I
Exit	EXIT	EXIT	
Input (CCU Register)	RE	IN	R,E
Insert Character	RS	IC	R(N),D(B) *
Insert Character and Count	RSA	ICT	R(N),B *
Load	RS	L	R, D (B) *≠
Load Address	RA	LA	R,A †
Load Character Register	RR	LCR	R1(N1),R2(N2)
Load Character with Offset Reg.	RR	LCOR	R1(N1),R2(N2)
Load Halfword	RS	LH	R,D(B) */
Load Halfword Register	RR	LHR	R1,R2
Load Halfword with Offset Reg.	RR	LHOR	R1,R2
Load Register	RR	LR	R1,R2 #
Load Register Immediate	RI	LRI	R(N), I
Load with Offset Register	RR	LOR	R1, R2 #
Or Character Register	RR	OCR	R1(N1),R2(N2)
Or Halfword Register	RR	OHR	R1,R2
Or Register	RR	OR	R1,R2
Or Register Immediate	RI	ORI	R(N), I
Output (CCU Register)	RE	OUT	R,E

Instruction	Format Code	Mnemonic	Operand Field Format	
Store	RS	ST	R,D (B)	* #
Store Character	RS	STC	R(N),D(B)	*
Store Character and Count	RSA	STCT	R(N),B	*
Store Halfword	RS	STH	R,D(B)	*
Subtract Character Register	RR	SCR	R1(N1), R2 (N2)	@
Subtract Halfword Register	RR	SHR	R1,R2	
Subtract Register	RR	SR	R1,R2	#
Subtract Register Immediate	RI	SRI	R(N), I	@
Test Register Under Mask	RI	TRM	R(N), I	

With extended address (to 1 megabyte), the indicated instructions operate as follows:

* Use 22 bits (bytes X,0,1) of the base register B.
# Use 22 bits (bytes X,0,1) of register R,R1, and R2.
@ Use byte X of the first-operand register R or R1; byte X does not affect the setting of the C and Z latches.

EXTENDED MNEMONIC CODES

Extended Code		*Meaning*	*Equivalent Machine Instruction*	
BR	R2	Branch Register	LR	0, R2
NOP		No Operation	B	*+2
BND	D(B)	Branch Indirect	L	0, D(B)
BND	S	Branch Indirect	L	0, S
BLG	A	Branch Long	BAL	0, A
BBE	R(P), T	Branch on Bit Extended	BB	R(0,P), T for P<8
		or	BB	R(1,P-8), T for P≥8
STZ	D(B)	Store Zeros	ST	0, D(B)
STZ	S	Store Zeros	ST	0, S
STHZ	D(B)	Store Halfword Zeros	STH	0, D(B)
STHZ	S	Store Halfword Zeros	STH	0, S
	Used After Compare instructions:			
BE	T	Branch on Equal	BZL	T
BL	T	Branch on Low	BCL	T
	Used after Add instructions:			
BO	T	Branch on Overflow	BCL	T

Note: In the BBE extended code, P represents an absolute expression that specifies a bit in byte 0 or 1 of a register. The value of the expression must be between 0 and 15. All other operand values have the same meaning, as in the standard machine instruction format.

3725 Instruction Decode

These charts may be used to decode the 4 digit hexadecimal representation of a 3725 machine instruction.

Use the chart as follows:

(1) Locate the first digit (D_1) of the instruction in hex in the column of numbers on the left side of Table I.

(2) Locate the second digit of the instruction in the row of numbers at the top of Table I.

(3) Go to the intersection of the column and row represented by the two numbers. You will find either the mnemonic or a reference to Table II, Table III, or Table IV.

Tables II and IV require that you locate digit 3 (D_3) only of the instruction in the row of digits at the top of each chart. Follow the instructions for Table I to use Table III, substituting digit 3 (D_3) and digit 4 (D_4). Table V is entered from Table III only when $D_3 = 7$ and $D_4 = 0$.

Table I

(D_1) \ (D_2)	0 1 2 3 4 5 6 7	8 9 A B C D E F
0 1 2 3 4 5 6 7	Table III	Table II
8	LRI	BZL
9	ARI	BCL
A	SRI	B
B	CRI	Table IV
C	XRI	BB
D	ORI	
E	NRI	
F	TRM	

Table II

(D_3) 0 1 2 3 4 5 6 7	8 9 A B C D E F
IC	STC

Table III

(D_3)	(D_4) 0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	*	LH	L	LH	OUT	LH	L	LH	LCR	LH	L	LH	IN	LH	L	LH
1	ICT								ACR							
2	*								SCR							
3	STCT								CCR							
4	BALR								XCR							
5	IOH								OCR							
6	*								NCR							
7	Table V								LCOR							
8	LHR	STH	ST	STH		STH	ST	STH	LR	STH	ST	STH		STH	ST	STH
9	AHR								AR							
A	SHR								SR							
B	CHR								CR							
C	XHR								XR							
D	OHR								OR							
E	NHR								NR							
F	LHOR								LOR							

Table IV

(D_3) 0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LA	*			BAL	*			BCT							

Table V

(D1)	(D_2) 0	1	2	3	4	5	6	7
0	EXIT	IOHI						
1-7	*							

*Dentoes invalid operation.

Name	Instruction	C, Z	Number of Machine Cycles: No Branch	Number of Machine Cycles: Branch	Number of Machine Cycles: Notes	Format: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
LRI	*Load Register Immediate*	*	1	–		1 0 0 0 0 R N Immediate Data
ARI	Add Register Immediate	*	1			1 0 0 1 0
SRI	Subtract Register Immediate	*	1			1 0 1 0 0
CRI	Compare Register Immediate	*	1			1 0 1 1 0
XRI	Exclusive Or Register Immediate	*	1			1 1 0 0 0
ORI	OR Register Immediate	*	1			1 1 0 1 0
NRI	And Register Immediate	*	1			1 1 1 0 0
TRM	Test Register Under Mask	*	1			1 1 1 1 0 R N Mask Bits
BALR	Branch & Link Register		–	4		0 R_2 0 R_1 0 1 0 0 0 0 0 0
LHR	Load Halfword Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 0 0 0 0 0 0 0 0
LR	Load Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 0 0 0 0 1 0 0 0
AHR	Add Halfword Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 0 0 0 1 0 0 0 0
AR	Add Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 0 0 0 1 1 0 0 0
SHR	Subtract Halfword Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 0 0 1 0 0 0 0 0
SR	Subtract Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 0 0 1 0 1 0 0 0
CHR	Compare Halfword Register	*	1			0 0 0 0 0 0 0 1 0 0 1 1 0 0 0 0
CR	Compare Register	*	1			0 R_2 0 R_1 0 0 0 1 0 0 1 1 1 0 0 0
XHR	Exclusive Or Halfword Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 0 0 0 0 0 0 0
XR	Exclusive Or Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 0 0 0 1 0 0 0
OHR	OR Halfword Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 0 0 1 0 0 0 0
OR	OR Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 0 0 1 1 0 0 0
NHR	And Halfword Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 1 0 0 0 0 0 0
NR	And Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 1 0 0 1 0 0 0
LHOR	Load Halfword with Offset Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 1 1 0 0 0 0 0
LOR	Load with Offset Register	*	1	4	Note 3	0 0 0 0 0 0 0 1 1 1 1 1 0 0 0 0
LCR	Load Character Register	*	1			0 R_2 N_2 0 R_1 N_1 0 0 0 0 1 0 0 0
ACR	Add Character Register	*	1			0 0 0 0 1 1 0 0 0
SCR	Subtract Character Register	*	1			0 0 0 1 0 1 0 0 0
CCR	Compare Character Register	*	1			0 0 0 1 1 1 0 0 0
XCR	Exclusive Or Character Register	*	1			0 0 1 0 0 1 0 0 0
OCR	OR Character Register	*	1			0 0 1 0 1 1 0 0 0
NCR	And Character Register	*	1			0 0 1 1 0 1 0 0 0
LCOR	Load Character with Offset Register	*	1			0 0 1 1 1 1 0 0 0
L	Load	*	4/Note 8	7/Note 8	Note 1	0 Base Reg 0 R 0 Displacement 1 0
ST	Store		4/Notes 4		Note 2	0 0 1 1 0
LH	Load Halfword	*	3/Note 8	6/Note 8		0 Base Reg 0 R 0 Displacement 1
STH	Store Halfword		4/Notes 4			0 0 1 1
IC	Insert Character	*	3/Note 8	–		0 Base Reg 1 R N 0 Displacement
STC	Store Character		4/Notes 4			0 1 1
ICT	Insert Character and Count		4			0 Base Reg 0 R N 0 0 0 0 1 0 0 0 0
STCT	Store Character and Count		5/Note 4			0 0 0 0 1 1 0 0 0 0
BZL	Branch on Z Latch		2	5		1 0 0 0 1 Displacement (T field) ± ■
BCL	Branch on C Latch		2	5		1 0 0 1 1
B	Branch			4		1 0 1 0 1
BCT	Branch on Count		3	5		1 0 1 1 1 1 Displacement (T field) ± ■
BB	Branch on Bit		2	5		1 1 M M 1 M 16 31
BAL	Branch & Link		–	4		1 0 1 1 1 R 0 1 X 2 Address 17
LA	Load Address		2	4		1 0 1 1 1 0 0
EXIT	Exit			2 if L5, else 9		0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0
OUT	Output (CCU Reg)				Note 6	0 E 0 R E 0 1 0 0
IN	Input (CCU Reg)				Note 7	0 0 1 1 0 0
IOH	Adapter I/O	*	Note 5			0 R_2 0 R_1 0 1 0 1 0 0 0 0 16 31
IOHI	Adapter I/O Immediate	*	Note 5			0 0 0 0 0 R 0 1 1 1 0 0 0 0 Adapter dependent

1 cycle 200 nanoseconds

Legend:

* = Instructions that can alter condition latches.

■ *1 = Negative displacement*

0 = Positive displacement

Notes:

1. Add 2 cycles if the data is not on a fullword boundary.
2. Add 3 cycles if the data is not on a fullword boundary.
3. If register 0 (IAR) is specified as R1, a branch occurs to the address formed in register 0 and the condition latches remain unchanged.
4. If the next instruction executed does not reference storage, the number of cycles required is as follows: ST = 2, STH = 1, STC = 1 and STCT = 3. Add 1 cycle if the base register = 0.
5. The total time required for IOH/IOHI is as follows:
   - IOH/IOHI for the channel adapter = 4.57 microseconds.
   - IOH/IOHI for the communications scanner processor = 10.40 microseconds.
6. 1 cycle with the following exceptions:
   - 2 cycles for OUT X'78'
   - 3 cycles for OUT X'70', X'73', X'7B', X'7C', X'7D', X'7E' or X'7F'
   - 4 cycles for the output using the IAR as an external register.
   - 5 cycles for OUT X'74'
7. 2 cycles with the following exceptions:
   - 1 cycle for IN X'74' and the input using the IAR as an external register.
   - 4 cycles for IN X'70'
   - Add 3 cycles if the general register addressed is the IAR.
8. Add 1 cycle if the base register = 0.

Section 11. Input/Output (External) Register Functions (XSYSEQU Macro)

Input and Output Registers

Label	Register (Hex)	Function
		Level 2 External Registers
SYSL2IAR	00	Level 2 IAR.
SYSL2R1	01	Level 2 register 1.
SYSL2R2	02	Level 2 register 2.
SYSL2R3	03	Level 2 register 3.
SYSL2R4	04	Level 2 register 4.
SYSL2R5	05	Level 2 register 5.
SYSL2R6	06	Level 2 register 6.
SYSL2R7	07	Level 2 register 7.
		Level 3 External Registers
SYSL3IAR	08	Level 3 IAR.
SYSL3R1	09	Level 3 register 1.
SYSL3R2	0A	Level 3 register 2.
SYSL3R3	0B	Level 3 register 3.
SYSL3R4	0C	Level 3 register 4.
SYSL3R5	0D	Level 3 register 5.
SYSL3R6	0E	Level 3 register 6.
SYSL3R7	0F	Level 3 register 7.
		Level 4 External Registers
SYSL4IAR	10	Level 4 IAR.
SYSL4R1	11	Level 4 register 1.
SYSL4R2	12	Level 4 register 2.
SYSL4R3	13	Level 4 register 3.
SYSL4R4	14	Level 4 register 4.
SYSL4R5	15	Level 4 register 5.
SYSL4R6	16	Level 4 register 6.
SYSL4R7	17	Level 4 register 7.
		Level 5 External Registers
SYSBGIAR (SYSBGR0)	18	Level 5 IAR (register 0).
SYSBGR1	19	Level 5 register 1.
SYSBGR2	1A	Level 5 register 2.
SYSBGR3	1B	Level 5 register 3.
SYSBGR4	1C	Level 5 register 4.
SYSBGR5	1D	Level 5 register 5.
SYSBGR6	1E	Level 5 register 6.
SYSBGR7	1F	Level 5 register 7.

Input and Output Registers (Cont.)

Label	Register (Hex)	Function
		Level 1 External Registers
SYSL1IAR	20	Level 1 IAR.
SYSL1R1	21	Level 1 register 1.
SYSL1R2	22	Level 1 register 2.
SYSL1R3	23	Level 1 register 3.
SYSL1R4	24	Level 1 register 4.
SYSL1R5	25	Level 1 register 5.
SYSLIR6	26	Level 1 register 6.
SYSL1R7	27	Level 1 register 7.
	X'28' through X'2F'	Reserved for hardware use.
		Fixed Pointer Registers (used for adapter cycle steal)
X30SPR	30	CA No. 1.
X31SPR	31	CA No. 2.
X32SPR	32	CA No. 3. (Also referred
X33SPR	33	CA No. 4. (to as X'3m'
X34SPR	34	CA No. 5.
X35SPR	35	CA No. 6.
	X'36' through X'3E'	Reserved
X3FSPR	3F	All communication scanner processors.
LVL1SADR	40	Level 1 interrupt address.
LVL2SADR	41	Level 2 interrupt address.
LVL3SADR	42	Level 3 interrupt address.
LVL4SADR	43	Level 4 interrupt address.
XRXDBADR	44	Byte operations base register (XDB).
XRXDHADR	45	Halfword operations base register (XDH).
XRXDAADR	46	Word operations base register (XDA).
—	47	Reserved for hardware use.
IOHTASUB	48	TA substitution register for IOH when 0 used for R2.
	X'49' through X'4F'	Reserved.
		Control Program External Registers.
XRL3ISV	50	Channel level 3 interrupts.
XRSNSIO1	51	Channel sense I/O data.
XRSNSIO2	52	Channel sense I/O data.
XRADPG2	53	CA trace SYSADPG2 save.
	X'54' through X'5D'	Reserved.
XR5EEP	5E	PEP level 3 linkage.
XR5FEP	5F	CSP IOH linkage.
	X'60' through X'67'	Reserved for hardware use.
—	68	INPUT only — zero register (Not used by NCP).
	X'69' through X'6F'	Reserved for hardware use.

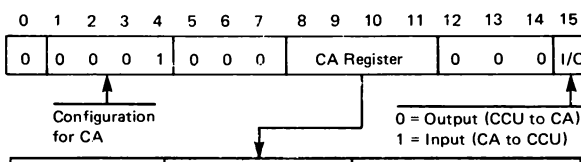
Input and Output Registers (Cont.)

Label	Register (Hex)	Function
		CCU External INPUT Registers
SYSSTSZ	70	Storage size installed.
SYSADRDT	71	Operator address/data entry register.
SYSFNINS	72	Operator display/function select control.
SYSINKEY	73	Insert storage protection/ address exception key.
SYSLAR	74	Lagging address register.
SYSAIOCW	75	CCW for adapter initiated operations (AIO).
SYSADPG1 (SYSIOC)	76	I/O Control level 1 interrupt requests. (IOC error summary register).
SYSADPG2	77	Scanner level 2 and CA level 3 interrupt requests.
SYSUTILI	79	Utility.
SYSCUCI	7A	High resolution timer/cycle utilization counter (read CUC).
—	7B	Used by hardware.
—	7C	Used by hardware.
SYSMCHK	7D	CCU hardware check register.
SYSCCUG1	7E	CCU level 1 interrupt requests.
SYSCCUG2	7F	CCU level 2, 3, or 4 interrupt requests.
		CCU External OUTPUT Registers
SYSHDSTP	70	Hardstop.
SYSDSPR1	71	Display register 1.
SYSDSPR2	72	Display register 2.
SYSPRKEY (SYSSTKEY)	73	Set system protection key register. (Set system storage key register).
—	74	Used by hardware.
SYSMSC2	76	*Miscellaneous control* 1.
SYSMSCTL	77	Miscellaneous control 2.
SYSDIAG	78	Force ALU checks (diagnostics).
SYSUTILO	79	Utility.

Input and Output Registers (Cont.)

Label	Register (Hex)	Function
SYSCUCO	7A	High resolution timer/cycle utilization counter control (reset CUC).
—	7B	Used by hardware.
SYSPCI3	7C	Set PCI level 3.
SYSPCI4	7D	Set PCI level 4.
SYSSTMSK	7E	Set program interrupt mask bits.
SYSRSMSK	7F	Reset program interrupt mask bits.

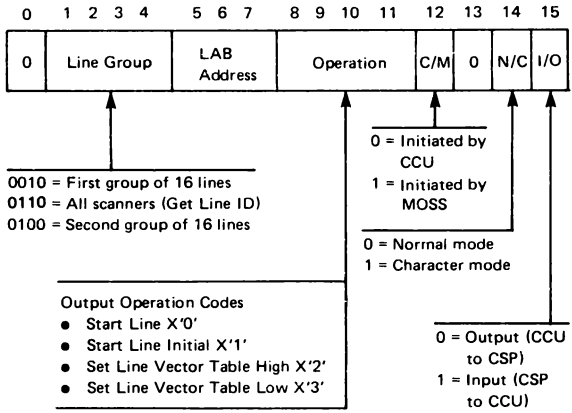
Channel Adapter IOH/IOHI Registers



Label	Register (Hex)	Function
CAISC	0	Input—Initial selection control register. Output—Reset initial selection.
CAISD	1	Input / Output: Initial selection address and command register.
CASSC	2	Input / Output: Data/Status control register.
CASSA	3	Input / Output: ESC address and status byte register.
CASD12	4	Input / Output: Data buffer bytes 1 and 2 or 5 and 6.
CASD34	5	Input / Output: Data buffer bytes 3 and 4 or 7 and 8.
CARNSTAT	6	Input / Output: NSC status control register.
CAECR	7	Input—CA condition register. Output—CA control register.
	X'8', X'9', and X'A'	Invalid
SYSXR6B	B	Input / Output: ESC Test I/O address and status register.
SYSXR6C	C	Input / Output: Cycle steal mode control register.
SYSXR6D	D	Input—CA level 1 interrupt check register.
SYSXR6E	E	Input—CA level 1 interrupt requests.
SYSXR6F	F	Input—CA level 3 interrupt requests.

Communication Scanner Processor IOH/IOHI Registers

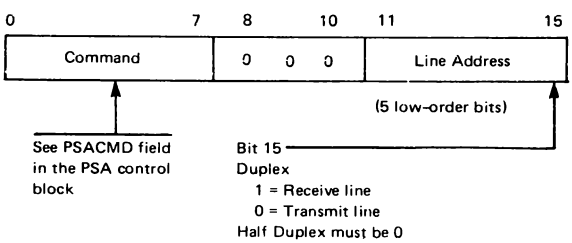
R2 register for IOH or
Second halfword for IOHI (TA field)



R1 register for IOH by operation code or
R register for IOHI by operation code

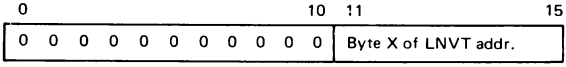
Start Line (Op 0 -Out) or Start Line Initial (Op 1 -Out)

(TD field)



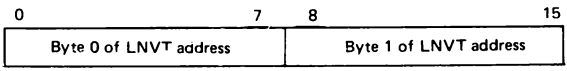
Set Line Vector Table High (OP 2 -Out)

(First of a two-part operation)

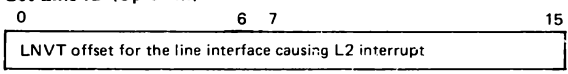


Set Line Vector Table Low (Op 3 -Out)

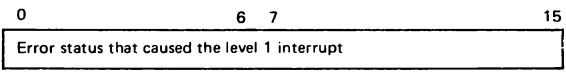
(Second of a two-part operation)



Get Line ID (Op 0 -In)



Get Error Status (Op 1–In)



Section 12. Macro SVC Codes

An SVC code is generated whenever level 5 uses the supervisor. The SVC linkage between levels 5 and 4 consists of an EXIT instruction (X'0070'), the SVC code, flags, communication bits, parameters, and space for output variables. Bits 0-6 of the SVC code field contain the SVC identifier and bit 7 contains the one-parameter flag. For a layout of the linkage generated by the RNSVC macro, see *ACF/NCP for the IBM 3725 Customization, LY30-3072.*

To determine the macro from a dump, enter the following table with the SVC code field value.

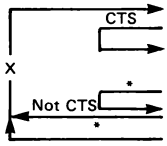
Example: Dump contains X'007021xxxx'
EXIT—┘ └—Enter table,find CALL

SVC Code Field (Hex) (Bit 7=0)	SVC Code Field (Hex) (Bit 7=1)	Identifier	Macro
02	03	SVC01	LEASE
04	05	SVC02	RELEASE
06	07	SVC03	CHAIN
08	09	SVC04	UNCHAIN
0A	0B	SVC05	SCAN
0C	0D	SVC06	POINT
0E	0F	SVC07	DEQUE
10	11	SVC08	ENQUE
12	13	SVC09	ADVAN
14	15	SVC10	INSERT
16	17	SVC11	EXTRACT
18	19	SVC12	RETURN
1A	1B	SVC13	CHAP
1C	1D	SVC14	TRIGGER
1E	1F	SVC15	QPOST
20	21	SVC16	CALL
22	23	SVC17	XIO (BSC/SS line)
24	25	SVC18	XIO (channel)
26	27	SVC19	RSLVSNP
28	29	SVC20	XIO (set mode)
2A	2B	SVC21	XIO (immediate)
2C	2D	SVC22	SETIME
2E	2F	SVC23	TPPOST

SVC Code Field (Hex)		Identifier	Macro
(Bit 7=0)	(Bit 7=1)		
30	31	SVC24	RSLVRID (SUPV=NO)
32	33	SVC25	COPYBCU
34	35	SVC26	SYSXIT
36	37	SVC27	FLIPPS
3A	3B	SVC29	GETBYTE
3C	3D	SVC30	PUTBYTE
3E	3F	SVC31	GETIME
40	41	SVC32	EXECBHR
42	43	SVC33	ABORT,CC=0
44	45	SVC34	ABORT,CC≠0, RELEASE
46	47	SVC35	ABORT,CC≠0, PASS
48	49	SVC36	ABORT,CC≠0, SYSOPT
4A	4B	SVC37	RSLVNAD
4C	4D	SVC38	XIO SDLC (Link)
4E	4F	SVC39	XPORTVR
50	51	SVC40	COPYPIU (LEASE=NO)
54	55	SVC42	COPYPIU (LEASE=YES)
56	57	SVC43	RSLVSSCP
58	59	SVC44	XIO (CHANANS)
5A	5B	SVC45	XIO (Channel,CAB=)
5E	5D	SVC47	NCHNG
60	61	SVC48	COMMIT
62	63	SVC49	DECOMMIT
7A	7B	SVC61	BFREVENT
80	81	SVC64	PRELEASE
82	83	SVC65	VREVENT
84	85	SVC66	ATTACHVR
86	87	SVC67	DETACHVR
8C	8D	SVC70	ALLOCATE
90	91	SVC72	ACTVRIT
92	93	SVC73	DACTVRIT
94	95	SVC74	LINKTGB
96	97	SVC75	RS' 'TGB
98	99	SVC76	S iGB
9A	9B	SVC77	X.. iTG)
9C	9D	SVC78	ROUTE
9E	9F	SVC79	TRACEPIU
A0	A1	SVC80	QMOSS
A8	A9	SVC84	FETRACE

Section 13. Character Mode PCF State Diagrams

PCF Start/Stop Line Interface



Hex	
0	No-op
1	Unused
2	Unused
3	Unused
4	Unused
5	Unused
6	Unused
7	Receive
8	Transmit initial
9	Transmit normal
A	Transmit break
B	Prepare to turn
C	Transmit turn, request-to-send off
D	Transmit turn, request-to-send on
E	Unused
F	Unused

How to read charts

- NCP sets PCF state 8 (indicated by no line going to 8)
- Clear to send rising forces PCF state 9.
- Clear to send falling forces:
  - —A level 2 interrupt
  - —PCF state from C to 7 (Receive)

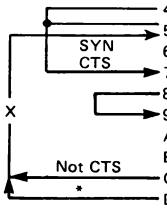
X = Level 2 interrupt
* = Tag time (after one character time)

LCD

Hex	
0	SS 9/6
1	
2	SS 8/5
3	Auto-call
4	SS 9/7
5	SS 10/7
6	SS 10/8
7	SS 11/8, 2848
8	Unused
9	SDLC 8-bit byte-length
A	Reserved
B	Reserved
C	BSC EBCDIC
D	BSC ASCII
E	Reserved
F	Unused

Emulation Program BSC code uses the character mode interface but the NCP code does not.

PCF BSC Line Interface



Hex	
0	No-op
1	Unused
2	Unused
3	Unused
4	Monitor phase, DSR check off
5	Monitor phase, DSR check on
6	Unused
7	Receive in phase
8	Transmit initial
9	Transmit normal
A	Transmit with new sync
B	Unused
C	Transmit turn, request-to-send off
D	Transmit turn, request-to-send on
E	Unused
F	Unused

X = Level 2 interrupt
* = Tag time (after one character time)

Section 14. NCP and EP Abend Codes

The abend codes for NCP and EP systems are defined in the XSYSABNS and XCXTL5A module.

When an error that causes an abend (abnormal termination) occurs, the routine detecting the error posts an abend code in halfword direct addressable storage location X'760' and then branches to the supervisor's abend processor (CXAABND). Locating the abend code in the dump gives some insight into the reason for the abnormal termination.

If the condition causing the abend is detected in level 1, the contents of external register X'74' (LAR) are stored at location X'7A8' and the contents of external register X'79' are stored at location X'6A8'. These two registers indicate the address of the failing instruction and the program level that was executing when level 1 was entered.

If the condition causing the abend is detected in any other level, location X'7A8' contains the address of the instruction that branched to the supervisor abend routine. This branch instruction is in the routine that detected the error condition.

Abend codes X'000' through X'7FFF' are for use by the NCP, codes X'8000' through X'BFFF' are reserved for IBM program products, and codes X'C000' through X'FFFF' are available for the user and will not be used by IBM.

The first byte of the abend code indicates which portion of the NCP detected the error. The second byte indicates the specific error that was detected.

Errors Detected by I/O Initiation Request, SVC Decoding, or a Level 1 Interrupt Handling Routine (Byte 0 = X'00')

X'0000' A CCU check was not processed by level 1.

X'0001' An invalid SVC code was executed.

X'0002' A protection exception occurred.

X'0003' An XIO macro to a communication line specified an invalid QCB address.

X'0004' An XIO macro to the channel specified a PIU containing invalid chain pointers.

X'0005' An XIO macro to the channel specified a PIU containing too much text (more than can ever be transferred with a single host read operation).

X'0006' An XIO macro to the channel specified a PIU enqueued to a system queue.

X'0007' An XIO macro to the channel was used while a task was still waiting on the ECB in the first buffer of the PIU.

X'0008' An XIO macro to the channel specified a PIU in which at least one buffer had too large a text count field in the buffer prefix.

X'0009' An addressing exception occurred.

X'000A' An input/output instruction exception occurred, and retry was not possible.

X'000B' EP area pointers at CYELOCEP are invalid .

X'000C' Unrecovered level 1 error occurred in EP code.

X'000D' An instruction attempted to branch to storage location X'0000'.

X'000E' A program check occurred in level 1.

X'000F' An XIO macro to the link specified an invalid address.

X'0010' An undefined intial-selection sequence or undefined data/status service level 3 interrupt occurred.

X'0011' A level 3 channel adapter interrupt for a host Write or Write Break occurred, and neither zero count override nor channel stop was indicated. One of these conditions should be present for every host write operation.

X'0012' An intial selection sequence on a channel adapter was undefined.

X'0013' An outbound BTU had an invalid chain field.

X'0014' A data/status sequence on a channel adapter was undefined.

X'0015'	An XIO to the channel specified a PIU address outside the buffer pool.
X'0016'	An XPORTVR macro specified an invalid buffer address.
X'0017'	An unrecoverable level 1 channel adapter check has occurred.
X'0018'	Zero count override was detected on a host read operation.
X'0019'	An initial IN CW did not have the zero count override flag set for channel I/O.
X'001A'	The retry limit for an input or output instruction was exceeded.
X'001B'	The program attempted to execute an invalid operation code.
X'001C'	The program attempted to switch channel adapters via an XIO macro when the logic is not generated into the NCP.
X'001D'	The program attempted to use an XIO macro for a busy communication line.
X'001E'	More than one XIO macro was outstanding for the same PIU.
X'001F'	An XIO macro to the channel specified an invalid TH text count.
X'0020'	The INCWAR in a channel adapter was incorrect (hardware error).
X'0021'	The access method pad size is larger than the host buffer unit size.
X'0022'	Outbound data pointers incorrect, program error.
X'0023'	Invalid PIU address issued to channel.
X'0024'	Out CW execution failure, hardware error.
X'0025'	Level 3 occurred when not in initial selection or data status for a channel adapter.
X'0026'	Attention delay PIU counter overflow or under flow.
X'0027'	Attention-presented bit is on, but intermediate queue is empty.
X'0028'	UIBLBBA is equal to 0. (Program error).
X'0029'	Channel interface is disabled while the NCP is active.
X'002A'	During initialization a level 3 was not pending on the channel adapter that is being loaded across.

X'002B' During initialization, a level 3 is pending on a channel adapter which has been generated as inactive.

X'002C' During initialization, a channel adapter which has been generated as inactive can not be interface disabled within a reasonable time. Manual intervention may be required.

X'002D' Invalid CAB address.

X'002E' Channel initialization error.

X'002F' Level 1 CCU I/O exception occurred. The address at IAR-2 was not equal to the address in LAR.

EP Abend Codes (Located in group 0 register 1)

X'0031' L1 scanner ERP – Scanner error occurred during ERP.

X'0032' L1 scanner ERP – Unable to recover from CCU outbus check. Unable to locate the failing output X'4X' instruction.

X'0033' L1 CA ERP – Unable to select the failing channel adapter.

X'0035' L1 CA ERP – Channel adapter error occurred during ERP.

X'0036' L1 CA ERP – Unable to recover from CCU outbus check. Unable to locate the ailing output X'6X' instruction.

X'0037' L1 CA ERP – CCU outbus check did not occur on L2 or L3.

X'0038' Initialization – CCU interrupt request detected.

X'0039' L1 CCU ERP – L5 issued an in or out instruction.

X'003A' Initialization – Adapter check detected.

X'003B' L1 CCU ERP – Unable to recover from inbus parity check. Unable to locate retry point for Input X'6C'.

X'003C' L1 CA ERP – Unable to recover from CCU outbus check. Unable to locate retry point for Output X'6C'.

X'003D' L1 ERP – L1 error rate threshold exceeded.

X'003F' L1 ERP – Unable to determine interrupted level.

X'0040' L3 interrupt from EP and CA not system generated.

X'0050' CXCAANS got control with abort pending off.

X'0051' CXCAANS got control with SNP mask = 0.

X'0052' Program requested an abort, but abort request is off.

X'0053' CA active with write, write break, or read, but channel-inoperative bit is on.

X'0054' Program requested an interrupt when in abort complete state or channel no-op state.

X'0055' The buffer following the current buffer has been overlaid.

X'0056' A load was attempted over a channel adapter coded NCPCA=INACTIVE and no EP CHCB was specified.

X'0057' XIO macro issued for multilink transmission group for a buffer on a system queue.

X'0058' During initialization the non-IPLing channel adapter was unable to present a level 3 interrupt.

X'0059' Same NS number assigned to two different PIUs.

Errors Detected by Task Management (Byte 0 = X'01')

X'0101' Invalid SCB or CUB address. LXBPOLL points at the service-order-table header without a Contact Poll command active.

X'0102' A TRIGGER macro specified an invalid QCB.

X'0104' A reentrant CALL macro specified a non-reentrant subroutine, or a level 5 task issued a reentrant CALL macro to code that is not a subroutine.

X'0105' A level 5 task used a non-reentrant CALL macro when either the calling task or the called subroutine was reentrant.

X'0107' A BHR attempted to use a QPOST macro.

X'0108' A SETIME macro specified an interval greater than 43200 seconds.

X'0109' A BHR attempted to use the QPOST operand on a SYSXIT macro.

X'010C' A task attempted to use a SYSXIT macro while save area(s) were still allocated to its queue control block.

X'010D' A COPYPIU macro specified an RU count too high.

X'010E' A QPOST macro specified an invalid QCB address.

X'010F' A TPPOST macro specified a BCU with an invalid resource ID.

X'0112' A TPPOST macro specified an invalid BCU address (address high).

X'0113' A COPYPIU macro specified an invalid old buffer address (address low).

X'0114' A COPYBCU macro specified an invalid old buffer address.

X'0115' A COPYPIU macro specified an invalid new buffer address (address low).

X'0116' A COPYBCU macro specified an invalid new buffer address (address high).

X'0117' A task attempted to use an EXECBHR macro when the point 3 BHR queue was empty.

X'0118' A user BHR dequeued a BCU and failed to return it to the queue (via an INSERT macro) prior to the execution of an IBM BHR.

X'0119' A BHR attempted to use an EXECBHR macro.

X'0120' A dynamic save area pool was incorrectly structured.

X'0121' A SETIME macro specified an ECB address outside the buffer pool.

X'0122' A SETIME macro specified an invalid QCB address.

X'0129' A CHAP macro specified an invalid QCB address.

X'012D' A task attempted a reentrant return when no save area was currently allocated to the task.

X'0130' A POST macro specified an ECB whose status was already 'event complete'.

X'0132' COPYPIU – LEASE = YES invalid – new register value too large.

X'0133' COPYPIU – LEASE = YES – old PIU is too long. (Over 255 buffers).

X'0134' COPYPIU – LEASE = YES – new buffer chain is too long. New chain is longer than the old.

X'0135' Level 4 attempted to transfer control to level 3 but level 3 was disabled.

Errors Detected by Queue Management (Byte 0 = X'02')

X'0201' An ENQUE macro specified an element that was already enqueued.

X'0202' An INSERT macro specified an element that was already enqueued.

X'0203' An EXTRACT macro specified the same address for the QCB and the positional element.

X'0205' An INSERT macro specified an element at the end of a queue.

X'0206' An INSERT macro specified the same address for the element to be inserted and the element after which it was to be inserted.

X'0207' An INSERT macro specified the same address for the element to be inserted and the QCB governing the queue.

X'0208' An ENQUE macro specified the same address for the element to be enqueued and the QCB governing the queue.

X'0209' A BHR attempted to use an ENQUE macro specifying an active queue control block.

X'0210' An ENQUE macro specified an element outside the buffer pool.

X'0211' An INSERT macro specified an element outside the buffer pool (positional element)

X'0212' An INSERT macro specified an element outside the buffer pool (insertion element).

X'0213' An EXTRACT macro specified an element outside the buffer pool (positional element).

X'0215' An ADVAN macro specified an element outside the buffer pool (positional element).

X'0216' A DEQUE macro specified an invalid QCB address.

X'0217' An ENQUE macro specified an invalid QCB address.

X'0218' A POINT macro specified an invalid QCB address.

X'0219' An INSERT macro specified an invalid QCB address.

X'021A' An INSERT macro specified the active QCB.

X'021B' An ENQUE macro attempted to enqueue the active QCB.

X'021C' Head/tail not both 0.

X'021D' Invalid QCB address passed to SETPRI.

X'021E' BFREVENT or VREVENT issued with the ECB already in a chain.

Errors Detected by Buffer Management (Byte 0 = X'03')

X'0301' A CHAIN macro specified a buffer that was already chained.

X'0302' A CHAIN macro specified the same address for the buffer to be chained and the buffer to which *it was* to be chained.

X'0303' Request too large.

X'0304' A RELEASE macro specified a BCU containing more buffers than the system limit on buffers per BCU.

X'0306' A RELEASE macro specified a BCU enqueued to a system queue.

X'0307' The BCU specified in a RELEASE macro had a task still waiting on its event control block.

X'030F' A RELEASE macro specified a buffer outside the buffer pool (buffer address low).

X'0310' A CHAIN macro specified a positional buffer outside the buffer pool.

X'0311' A CHAIN macro specified that a buffer outside the buffer pool be chained.

X'0312' An UNCHAIN macro specified a positional buffer outside the buffer pool.

X'0314' A SCAN macro specified a buffer outside the buffer pool (positional buffer address).

X'0315' A RELEASE macro specified a buffer outside the buffer pool (buffer address high).

X'0318' A LEASE macro specified an ECB address outside the buffer pool.

X'0319' A LEASE macro specified a buffer count of 0.

X'0320' The buffer pool size and the buffer availability count were in conflict.

X'0321' Insufficient buffers for initialization.

X'0322' A RELEASE macro specified a buffer already in the free buffer pool.

X'0325' A failure occurred on a level five LEASE after PRELEASE was issued.

X'0326' Commit for too many buffers.

X'0327' Commit for zero (0) buffers.

X'0328'
- Buffer ID (X'C2' in -3 of the buffer prefix) is missing or incorrect.
- For a leased buffer, bytes -4 and -3 of the buffer prefix are not X'80C2'.

Errors Detected by Supervisory Services (Byte 0 = X'04')

X'0401' A GETBYTE macro specified a BCU address outside the buffer pool.

X'0403' A PUTBYTE macro specified a BCU address outside the buffer pool.

X'0405' A GETBYTE macro specified a BCU with an incorrect text length.

X'0406' A PUTBYTE macro specified a BCU with an incorrect text offset (in one or more of the buffer prefix fields), or a PUTBYTE macro with the operand UPDATE=YES specified a BCU with an incorrect text length.

X'0407' A GETIME macro specified invalid options.

X'0408' The PRELEASE macro is already on the queue.

X'0409' Invalid return code on level 3 XIO.

Hardware Related and Miscellaneous Errors (Byte 0= X'05', X'07', X'08', X'09'). See L1B for X'09'.

X'0500' The true-action option or the false-action option selected is to request an "abend or IPL." The address trace enhancement (CXBACIT) selects this option.

X'0501' The retry limit for unresolved level 1 interrupts was exceeded.

X'0502' The retry limit for unresolved level 3 channel adapter interrupts was exceeded.

X'0503' A nonrecoverable channel adapter check occurred.

X'0504' A nonrecoverable communication scanner check occurred.

X'0505' A channel adapter cycle steal protection exception occurred.

X'0506' A channel adapter cycle steal addressing exception occurred.

X'0507' The retry limit for recoverable channel adapter checks was exceeded.

X'0508' The retry limit for recoverable communication scanner checks was exceeded.

X'0509' Channel attention time-out.

X'050A' A channel adapter check could not be resolved.

X'050B' A communication scanner check could not be resolved.

X'050C' A program level 1 interrupt could not be resolved.

X'050D' A machine check or IPL request was not serviced by hardware.

X'050E' A program level 3 interrupt could not be resolved.

X'050F' A program level 4 timer interrupt request expired and the timer interval was not scheduled.

X'0521' NCP generation conflict—a program level 1 interrupt occurred from an inactive or undefined channel adapter. The channel adapter, if installed, should have been switched offline by the operator at the 3725 console and should have remained disabled.

X'0522' NCP generation conflict—a program level 3 interrupt occurred from an inactive or undefined channel adapter. The channel adapter, if installed, should have been switched offline by the operator at the 3725 console and should have remained disabled.

X'0523' Scanner cycle-steal addressing exception.

X'0524' Scanner cycle-steal storage protection exception.

X'0525' Load module is too large. Code and/or blocks that must reside below 64K are above 64K.

X'0527' A nonrecoverable CA cycle-steal check occurred.

X'0701' ANS initiated by the link-attached NCP.

X'0702' ANS initiated at the link-attached controller's console.

X'0703' SIM received by the secondary NCP.

X'0704' An empty queue that should not be empty was specified in a POINT or DEQUE macro.

X'0705' Invalid box error record (BER) type coded on the BDCRP macro.

X'0706' Invalid BER ID coded on the BDCRP macro.

X'0707' The time-out ERP was entered by the transmit leg of a duplex SDLC link.

X'0710' CCT entry not found in LTVT.

X'0800' The link used for loading was not defined at NCP generation.

X'0900' MOSS down or out-of-sequence on CPIT available.

X'0901' MOSS down or out-of-sequence waiting for status on CPIT available.

X'0902' MOSS down or out-of-sequence on CSP IPL complete.

X'0903' MOSS down or out-of-sequence on CDS request.

X'0904' MOSS down or out-of-sequence waiting for status on CDS request.

X'0905' MOSS down or out-of-sequence waiting for CDS available.

X'0906' Incorrect IPL information passed from CLDP.

X'0908' Invalid Get-Line-ID address.

X'0909'	Invalid CCBBAR address.
X'090A'	Invalid SCF data in PSA.
X'090B'	MOSS passed incorrect data length to control program parameters saved.
X'090C'	MOSS passed incorrect address to the control program parameters saved.
X'090D'	MOSS passed incorrect data length to CDS available.
X'090E'	MOSS passed incorrect address to CDS available.
X'090F'	Invalid line communication status (LCS) field in the PSA.
X'0910'	AIO address exception on a channel adapter.
X'0911'	AIO storage protection on a channel adapter.
X'0912'	Attempt to select a channel adapter that is not installed.
X'0913'	Invalid IOH or IOHI instruction issued to a channel adapter.
X'0914'	An Output sequence was issued in error to a channel adapter.
X'0915'	Invalid ESC address.
X'0916'	AIO error.
X'0917'	AIO unresolved for channel adapter.
X'0918'	AIO invalid CCW.
X'0919'	Unresolved channel adapter level 1 interrupt.
X'091A'	PIO error to channel adapter.
X'091B'	Channel adapter check.
X'091C'	Unresolved channel adapter level 3 initial selection interrupt.
X'091D'	Unresolved channel adapter level 3 data/status interrupt.
X'091E'	Unresolved channel adapter level 3 interrupt.
X'091F'	Channel adapter level 3 IPL configuration check.
X'0920'	IOH failure during level 1 processing.
X'0921'	Interrupts received from a CA not generated active.
X'0922'	Interrupts received from a CA in ERP state.
X'0923'	Ground fault error.
X'0924'	All channel adapters are being disabled.

X'0925' Interrupt on ESC and channel adapter is not owned by EP.

X'0926' An inappropriate command issued for stacked initial status.

X'0927' Cannot disable a CA in ERP state.

X'0928' ESC address not within the range as generated by NCP. It is set by EP on level 1 ERP processing on channel data/status operations.

X'0930' Transmission subsystem (TSS) AIO addressing exception.

X'0931' TSS AIO storage-protection check.

X'0932' An IOH or IOHI instruction was issued to a transmission subsystem that was not installed.

X'0933' An invalid IOH or IOHI input instruction was issued to a TSS.

X'0934' Level 1 interrupt from a disconnected transmission subsystem on a CLAB.

X'0935' Level 1 interrupt from a disconnected TSS – unable to disable a redrive.

X'0936' Unresolved level 2 interrupt.

X'0937' TSS PIO input error.

X'0938' Unable to reset a CSP on a CLAB.

X'0939' Unable to disable a redrive.

X'094F' All scanners are down.

X'0950' Instruction-fetch address exception.

X'0951' Execute address exception.

X'0952' Instruction-fetch storage protection check.

X'0953' Execute storage protection check.

X'0954' Level 5 branched to storage location 0.

X'0955' User program branched to storage location 0.

X'0956' Level 2 PCI interrupt.

X'0970' Unresolved level 1 interrupt.

X'0971' Unresolved interrupted level.

X'0972' CCU hardware check.

X'0973' Program IPL request.

X'0974' Unresolved level 3 interrupt.

X'0975' Unresolved level 4 interrupt (hardware error).

X'0976' Unresolved level 4 PCI interrupt (hardware latch flipping on and off).

X'0977' Continuous and false level 4 PCI interrupt (hardware latch will not turn off).

X'0978' Configuration check level 3 interrupt.

X'0979' Unresolved SVC level 4 interrupt.

X'097A' MOSS continuous interrupt request (hardware error).

X'097B' MOSS continuous interrupt status (hardware error).

X'0990' Unresolved adapter level 1.

X'0991' Unresolved AIO level 1.

X'0992' Unresolved PIO level 1.

X'0994' All read redrive error registers failed.

X'09F0' Not enough information is available to recover when a data/status interrupt is pending during level 1 processing.

X'09F1' Not enough information is available to recover when an initial-selection interrupt is pending during level 1 processing.

Errors Detected in Level 5 (Byte 0 = X'10', X'30')

X'1001' A BCU with a Restart command contained an error in the text length field.

X'1002' The line control block (LCB) contained an invalid resource ID.

X'1003' The subtask sequence pointer in the LCB was not initialized.

X'1004' The BTU contained an invalid command modifier.

X'1005' After BHR execution, the device input queue was empty (point 1).

X'1006' After BHR execution, the line I/O queue was empty (point 2).

X'1007' After BHR execution, the point 3 BHR queue was empty.

X'1008' A task associated with the point 3 BHR queue was dispatched.

X'1009' The backspace BHR was dispatched, but the queue was empty.

X'100A' A data manipulation error occurred in the backspace BHR.

X'100B' The date/time BHR was dispatched, but the queue was empty.

X'100C' All skip flags were set in the service order table (SOT).

X'100D' The number of dial digits passed from the host was not equal to the BTU text length.

X'100E' No Reset command was found at the end of an operation that was being reset.

X'100F' The device base (DVB) contained an invalid resource ID.

X'1010' An invalid system resource ID was specified in the BCU.

X'1011' An invalid checkpoint data length was specified in the BCU.

X'1012' The BH set pointer (DVIBHSET) in the DVB did not match any entry in the system BH set table (BST).

X'1014' Level 5 was entered without an active task.

X'10EE' IOBPOLL points outside SOT.

X'10FF' Pending sessions count is negative.

X'3000' A task was dispatched with an empty QCB.

X'3001' Invalid UIB status in PIU.

X'3002' Invalid XIO return code.

X'3003' Invalid XPORT return code.

X'3004' Module CXDESSA entered when Deactivate Line halt is in progress.

X'3005' CXDCPSI unable to route PIU to SSCP.

X'3006' Reset Immediate XIO failed.

X'3007' Invalid PIU Format.

X'3008' Segmentation parameter N equals 0.

X'3009' Segmentation parameters conflict.

X'300A' Run terminator triggered with invalid status.

X'300B' Invalid network address in LKB.

X'300C' Invalid input passed to routine.

X'300D' LCB contains no PIU.

X'300E' CXDKFMR passed a request code to a routine which does not handle that request code.

X'300F' XIO Link failed on validated PIU.

X'3010' XPORT failed on validated PIU.

X'3011' XIO SETMODE failed.

X'3012' Invalid UIB type field.

X'3013' Invalid network address in CCU.

X'3014' Link-attached NCP received SNRM from local NCP.

X'3015' Link-attached NCP received DISC from local NCP.

X'3016' Remote detected permanent error in path to local and ANS is not in system.

X'3017' Inbound flow in SSCP-PU session of a type 1 PU.

X'3018' Begin bracket PIU not on queue.

SDLC/BSC Path Function Abend Codes

X'3019' A DEQUE macro was issued by SPF CPM-in, and there was no error PIU on the APPL process QCB.

X'301A' An ADVAN macro was issued by SPF CPM-in, and there was no error PIU on the APPL process QCB.

X'301B' An XPORT macro, issued by SPF CPM-in, failed for unknown reason.

X'301C' An XPORT macro, issued by SPF CPM-in, failed for an unknown reason during FID1-to-FID0 conversion.

X'301D' An XPORT macro, issued by SPF CPM-in, failed for an unknown reason during the export of a FID1 PIU.

X'301E' An XPORT macro was issued by an IBM point 3 BHR before the PIU was converted.

X'301F' A DEQUE macro was issued by SPF CPM-out and there was no error PIU on the APPL process QCB.

X'3020' An XPORT macro, issued by the build error module (CXDSERR), failed for an unknown reason.

X'3021' A POINT macro was issued by the build error module (CXDSERR) and there was no PIU on the APPL process QCB.

X'3025' Lines or links not quiesced count went negative.

X'3026' Auto network shutdown RVT scan error. (SNA)

X'3027' An undefined Contact Poll command was detected during SNA auto network shutdown.

X'3028' The link-attached NCP detected a condition on the active link to the local NCP which requires backup link monitoring. Although there are backup links to the local controller, there is no backup monitor code.

X'3029' RSLVNAD failed while attempting to process the extension address.

X'302A' RSLVNAD failed while attempting to process a freed control block.

X'302B' The attempt to dequeue the control block from the DR pool has failed.

X'302C' The end of the PUV or the LUV was reached before it was expected.

X'3040' Second buffer (IMR RECMS RU text buffer) could not be found – IMR buffer queuing error.

X'3041' LPDA RECMS RU text could not be found or buffer was not found.

Section 15. Line Character Codes

USASCII Character Code (even parity, 2848/2660) for Binary Synchronous Communication

PDF Code	EBCDIC S/370 Code	USASCII Code	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC S/370 Code	USASCII Code	USASCII Control Character	USASCII Graphics Character
03	03	60	ETX		81	01	C0	SOH	
06	2E	30	ACK		82	02	A0	STX	
0A	37	21	LF	(Note 1)	84	37	90	EOT	
18	18	0C	CAN		95	3D	D4	NAK	
21	18	42		(Note 2)	A0	40	82	SP	
22	18	22		(Note 3)	A3	7B	E2		#
24	5B	12		$	A5	6C	D2		%
27	7D	72		'	A6	50	B2		&
28	4D	0A		(	A9	5D	CA		)
2B	4E	6A		+	AA	5C	AA		*
2D	60	5A		–	AC	6B	9A		,
2E	4B	3A		.	AF	61	FA		/
30	F0	06		0	B1	F1	C6		1
33	F3	66		3	B2	F2	A6		2
35	F5	56		5	B4	F4	96		4
36	F6	36		6	B7	F7	F6		7
39	F9	4E		9	B8	F8	8E		8
3A	5E	2E		:	BB	5E	EE		;
3C	4C	1E		<	BD	7E	DE		=
3F	6F	7E		?	BE	6E	BE		>
41	C1	41		A	C3	83	E1		c
42	C2	21		B	C5	85	D1		e
44	C4	11		D	C6	86	B1		f
47	C7	71		G	C9	89	C9		i
48	C8	09		H	CA	91	A9		j
4B	D2	69		K	CC	93	99		l
4D	D4	59		M	CF	96	F9		o
4E	D5	39		N	D1	98	C5		q
50	D7	05		P	D2	99	A5		r
53	E2	65		S	D4	A3	95		t
55	E4	55		U	D7	A6	F5		w
56	E5	35		V	D8	A7	8D		x
59	E8	4D		Y	DD	A7	DD		(Note 4)
5A	E9	2D		Z	E1	81	C3		a
5F	6D	7D		_	E2	82	A3		b
60	7C	03		@	E4	84	93		d
63	C3	63		C	E7	87	F3		g
65	C5	56		E	E8	88	8B		h
66	C6	33		F	EB	92	EB		k
69	C9	4B		I	ED	94	D8		m
6A	D1	2B		J	EE	95	B8		n
6C	D3	1B		L	F0	97	87		p
6F	D6	7B		O	F3	A2	E7		s
71	D8	47		Q	F5	A4	D7		u
72	D9	27		R	F6	A5	B7		v
74	E3	17		T	F9	A8	CF		y
77	E6	77		W	FA	A9	AF		z
78	E7	0F		X	FC	5F	9F		¬
7E	4F	3F		!					

Notes:

1. *Displayed on the 2260 as the New Line (▲) symbol, Causes a carriage return and line feed on the 1050 Model 4 Printer.*
2. *Displayed on the 2260 as the EOM (▬) symbol. Prints on the 1050 Model 4 Printer as the exclamation mark (!).*
3. *Displayed on the 2260 as the Check (■) symbol. Prints on the 1050 Model 4 Printer as the quote (").*
4. *Displayed on the 2260 as the Start MI (▶) symbol. Prints on the 1050 Model 4 Printer as the cent sign (¢).*

USASCII Character Code (odd parity) for Binary Synchronous Communication

PDF Code	EBCDIC S/370 Code	USASCII Code	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC S/370 Code	USASCII Code	USASCII Control Character	USASCII Graphics Character
00*	00	00*	NUL		2F	61	2F		/
00*	17	(00)*	NUL		B0	F0	B0		0
01	01	01	SOH		31	F1	31		1
02	02	02	STX		32	F2	32		2
03*	03	03*	ETX		B3	F3	B3		3
04	37	04	EOT		34	F4	34		4
05*	2D	05*	ENQ		B5	F5	B5		5
86	2E	86	ACK		B6	F6	B6		6
07	2F	07	BEL		37	F7	37		7
08	16	08	BS		38	F8	38		8
89	05	89	HT		B9	F9	B9		9
8A	15	(8A)	LF		BA	7A	BA		
8A	25	8A	LF		3B	5E	3B		
0B	0B	0B	VT		BC	4C	BC		<
8C	0C	8C	FF		3D	7E	3D		=
0D	0D	0D	CR		3E	6E	3E		>
0E	0E	0E	SO		BF	6F	BF		?
8F	0F	8F	SI		40	7C	40		@
10	10	10	DLE		C1	C1	C1		A
91	11	91	DC1		C2	C2	C2		B
92	12	92	DC2		43	C3	43		C
13	13	13	DC3		C4	C4	C4		D
94	3C	94	DC4		45	C5	45		E
15	3D	15	NAK		46	C6	46		F
16	32	16	SYN		C7	C7	C7		G
17*	26	17*	ETB		C8	C8	C8		H
98	18	98	CAN		49	C9	49		I
19	19	19	EM		4A	D1	4A		J
1A	3F	1A	SUB		CB	D2	CB		K
1A	CF	1A	SUB		4C	D3	4C		L
1A	E0	(1A)	SUB		CD	D4	CD		M
9B	27	9B	ESC		CE	D5	CE		N
1C	1C	1C	FS		4F	D6	4F		O
9D	1D	9D	GS		D0	D7	D0		P
9E	1E	9E	RS		51	D8	51		Q
1F	1F	1F	US		52	D9	52		R
20	40	20	SP		D3	E2	D3		S
A1	4F	A1		!	54	E3	54		T
A2	7F	A2		"	D5	E4	D5		U
23	7B	23		#	D6	E5	D6		V
A4	5B	A4		$	57	E6	57		W
25	6C	25		%	58	E7	58		X
26	50	26		&	D9	E8	D9		Y
A7	7D	A7		'	DA	E9	DA		Z
A8	4D	A8		(	5B	4A	5B		[
29	5D	29		)	DC	E1	DC		\
2A	5C	2A		*	5D	5A	5D		]
AB	4E	AB		+	5E	5F	5E		¬
2C	6B	2C		,	DF	6D	DF		—
AD	60	AD		-	E0	79	E0		
AE	4B	AE		.	61	81	61		a

( ) - Out only
*Control characters without parity bit

USASCII Character Code (odd parity) for Binary Synchronous Communication (Continued)

PDF Code	EBCDIC S/370 Code	USASCII Code	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC S/370 Code	USASCII Code	USASCII Control Character	USASCII Graphics Character
62	82	62		b	F1	98	F1		q
E3	83	E3		c	F2	99	F2		r
64	84	64		d	73	A2	73		s
E5	85	E5		e	F4	A3	F4		t
E6	86	E6		f	75	A4	75		u
67	87	67		g	76	A5	76		v
68	88	68		h	F7	A6	F7		w
E9	89	E9		i	F8	A7	F8		x
EA	91	EA		j	79	A8	79		y
6B	92	6B		k	7A	A9	7A		z
EC	93	EC		l	FB	C0	FB		{
6D	94	6D		m	7C	6A	7C		|
6E	95	6E		n	FD	D0	FD		}
EF	96	EF		o	FE	A1	FE		~
70	97	70		p	7F	07	7F	DEL	

BCD Character Code 1

PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character	PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character
01	60	40	Ⓝ	-	67	89	73		ı
02	7C	20		@	68	F5	0B		5
04	F8	10		8	6B	85	6B		e
07	88	70		h	6D	0D	(5B)	LF CR	
08	F4	08		4	6D	15	5B	LF CR	
0B	84	68		d	6E	25	3B	Index	
0D	0F	(58)	RES		70	F3	07		3
0D	14	(58)	RES		73	83	67		c
0E	0E	(38)	BYP		75	5B	57		$
0E	24	38	BYP		76	6B	37	Ⓢ	
10	F2	04		2	79	97	4F		P
13	82	64		b	7A	A7	2F		x
15	D0	54	MZ		7C	37	1F	EOT Ⓒ	
16	E0	34	RM	‡	7F	07	[7F]	DEL	
19	96	4C		o	81	6D	C0	Ⓝ	
1A	A6	2C		w	82	4A	A0		¢
1C	36	1C	UC		84	5C	90		•
1F	06	7C	LC		87	C8	F0		H
20	F1	02		1	88	3F	(88)		:
23	81	62		d	88	7A	88		:
25	99	52		r	8B	C4	E8		D
26	A9	32		z	8D	14	[D8]	RES	
29	95	4A		n	8E	24	[B8]	BYP	
2A	A5	2A		v	90	5F	84		
2C	35	[1A]	RS		93	C2	E4		B
2F	05	7A	HT		99	D6	CC		O
31	93	46		l	9A	E6	AC		W
32	A3	26		t	9C	36	9C	UC	
34	02	16	EOA Ⓓ		9F	06	[FC]	LC	
34	7B	16	EOA Ⓓ	#	A0	7E	82		-
37	4B	76	Ⓨ		A3	C1	E2		A
38	F7	0E			A5	D9	D2		R
3B	87	6E		g	A6	E9	B2		Z
3D	17	5E	IL		A9	D5	CA		N
3D	32	(5E)	IL		AA	E5	AA		V
3E	27	3E	PRE		AC	35	[9A]	RS	
40	40	01	SP		AF	05	[FA]	HT	
43	50	61		&	B1	D3	C6		L
45	98	51		q	B2	E3	A6		T
46	A8	31		y	B4	4F	96	EOA Ⓓ	
49	94	49		m	B7	4B	[F6]	Ⓨ	
4A	A4	29		u	B8	7F	8E		,,
4C	34	19	PN		BB	C7	EE		G
4F	04	79	PF		BD	17	[DE]	IL	
51	92	45		k	BE	27	[BE]	PRE	
52	A2	25		s	C0	40	[81]	SP	
54	F0	15		0	C3	4E	E1		+
57	C0	75	PZ		C5	D8	D1		Q
58	F6	0D		6	C6	E8	B1		Y
5B	86	6D		f	C9	D4	C9		M
5D	16	5D	BS		CA	E4	A9		U
5E	03	[3D]	EOB Ⓑ		CC	34	[99]	PN	
5E	26	[3D]	EOB Ⓑ		CF	04	[F9]	PF	
61	91	43		I	D1	D2	C5		K
62	61	23		/	D2	E2	A5		S
64	F9	13		9	D4	5D	95		)

[ ] = In only.
( ) = Out only.

BCD Character Code 1 (Continued)

PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character	PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character
D8	7D	8D		'	ED	15	[DB]	LF CR	
D8	C6	ED		F	EE	25	[BB]	Attn	
DD	16	[DD]	BS		F0	5E	87		:
DE	26	[BD]	EOB (B)		F3	C3	E7		C
E1	D1	C3		J	F5	5A	D7		I
E2	6F	A3		?	F6	68	[B7]	(S)	'
E4	4D	93		(	F9	D7	CF		P
E7	C9	F3		I	FA	E7	AF		X
E8	C6	8B		%	FC	37	9F	EOT (C)	
EB	C5	EB		E	FF	07	[FF]	DEL	

[ ] = In only.

BCD Character Code 2

PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character	PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character
01	60	40	Ⓝ		67	89	73		ı
02	7C	20		@	68	F5	0B		5
04	F8	10		8	6B	85	6B		e
07	88	70		h	6D	0D	(5B)	LF CR	
08	F4	08		4	6D	15	5B	LF CR	
0B	84	68		d	6E	25	38	Index	
0D	0F	(58)	RES		70	F3	07		3
0D	14	(58)	RES		73	83	67		c
0E	0E	(38)	BYP		75	5B	57		$
0E	24	38	BYP		76	6B	37	Ⓢ	'
10	F2	04		2	79	97	4F		P
13	82	64		b	7A	A7	2F		x
15	D0	54	MZ		7C	37	1F	EOT Ⓒ	
16	E0	34	RM	‡	7F	07	[7F]	DEL	
19	96	4C		o	81	6D	C0	Ⓝ	-
1A	A6	2C		w	82	4A	A0		¢
1C	36	1C	UC		84	5C	90		•
1F	06	7C	LC		87	C8	F0		H
20	F1	02		1	88	3F	(88)		
23	81	62		a	88	7A	88		
25	99	52		r	8B	C4	E8		D
26	A9	32		z	8D	14	[D8]	RES	
29	95	4A		n	8E	24	[B8]	BYP	
2A	A5	2A		v	90	5F	84		o
2C	35	[1A]	RS		93	C2	E4		B
2F	05	7A	HT		99	D6	CC		O
31	93	46		l	9A	E6	AC		W
32	A3	26		ı	9C	36	9C	UC	
34	02	16	EOA Ⓓ		9F	06	[FC]	LC	
34	7B	16	EOA Ⓓ	#	A0	7E	82		
37	4B	76	Ⓨ	.	A3	C1	E2		A
38	F7	0E		7	A5	D9	D2		R
3B	87	6E		g	A6	E9	B2		Z
3D	17	5E	IL		A9	D5	CA		N
3D	32	[5E]	IL		AA	E5	AA		V
3E	27	3E	PRE		AC	35	[9A]	RS	
40	40	01	SP		AF	05	[FA]	HT	
43	50	61		&	B1	D3	C6		L
45	98	51		q	B2	E3	A6		T
46	A8	31		y	B4	4F	96	EOA Ⓓ	
49	94	49		m	B7	13	F6	Ⓨ	
4A	A4	29		u	B8	7F	8E		..
4C	34	19	PN		BB	C7	EE		G
4F	04	79	PF		BD	17	[DE]	IL	
51	92	45		k	BE	27	[BE]	PRE	
52	A2	25		s	C0	40	[81]	SP	
54	F0	15		0	C3	4E	E1		+
57	C0	75	PZ		C5	D8	D1		Q
5B	F6	0D		6	C6	E8	B1		Y
5B	86	6D		f	C9	D4	C9		M
5D	16	5D	BS		CA	E4	A9		U
5E	03	[3D]	EOB Ⓑ		CC	34	[99]	PN	
5E	26	[3D]	EOB Ⓑ		CF	04	[F9]	PF	
61	91	43		,	D1	D2	C5		K
62	61	23		/	D2	E2	A5		S
64	F9	13		9	D4	5D	95		)

[ ] = In only.
( ) = Out only.

BCD Character Code 2 (Continued)

PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character	PDF Code	S/370 Code	BCD Line Code	BCD Control Character	BCD Graphics Character
D8	7D	8D			ED	15	[DB]	LF CR	
DB	C6	ED		F	EE	25	[B8]	Attn	
DD	16	[DD]	BS		F0	5E	87		:
DE	26	[BD]	EOB (B)		F3	C3	E7		C
E1	D1	C3		J	F5	5A	D7		!
E2	6F	A3		?	F6	12	B7	(S)	·
E4	4D	93		(	F9	D7	CF		P
E7	C9	F3		I	FA	E7	AF		X
E8	C6	8B		%	FC	37	9F	EOT (C)	
EB	C5	EB		E	FF	07	[FF]	DEL	

[ ] = In only.

Correspondence Character Code 1

PDF Code	S/370 Code	Correspondence Line Code	Correspondence Control Character	Correspondence Graphics Character	PDF Code	S/370 Code	Correspondence Line Code	Correspondence Control Character	Correspondence Graphics Character
01	5A	40	Ⓝ	!	67	A8	73		y
02	A3	20		t	68	F7	0B		7
04	F4	10		4	6B	5E	6B		
07	61	70		/	6D	0D	(5B)	LF CR	
08	F5	08		5	6D	15	5B	LF CR	
0B	97	68		P	6E	25	3B	Index	
0D	14	58	RES		70	F3	07		3
0E	24	38	BYP		73	86	67		f
10	F2	04		2	75	A6	57		w
13	7E	64		=	76	82	37	Ⓢ	b
19	89	4C		ı	79	81	4F		a
1A	92	2C		k	7A	83	2F		c
1C	36	1C	UC		7C	37	1F	EOT Ⓒ	
1F	06	7C	LC		7F	07	[7F]	LC	
20	F1	02		1	81	6E	C0	Ⓝ	°
23	87	62		g	82	E3	A0		T
25	A2	52		s	84	5B	90		$
26	88	32		h	88	6C	88		%
29	99	4A		r	8B	D7	E8		P
2A	84	2A		d	8E	24	[8B]	BYP	
2C	35	1A	RS		90	7C	84		@
2F	05	7A	Tab		93	4E	E4		+
31	A5	46		v	99	C9	CC		I
32	A4	26		u	9A	D2	AC		K
34	F9	16	EOA Ⓓ	9	9C	36	[9C]	UC	
37	60	76	Ⓨ	-	9F	06	[FC]	LC	
38	F8	0E		8	A0	4F	82		±
3B	6B	6E			A3	C7	E2		G
3D	17	5E	IL		A5	E2	D2		S
3D	32	(5E)	PRE		A6	C8	B2		H
3E	27	3E	PRE		A9	D9	CA		R
40	40	01	SP		AA	C4	AA		D
43	91	61		I	AF	05	[FA]	Tab	
45	96	51		o	B1	E5	C6		V
46	93	31		l	B2	E4	A6		U
49	7D	49		'	B4	4D	96	EOA Ⓓ	(
4A	85	29		e	B7	6D	F6		-
4C	34	19	PN		B8	5C	8E		*
4F	04	(79)	PF		BB	6B	[EE]		
51	4B	45			BE	27	[BE]	PRE	
52	95	25		n	C0	40	[81]	SP	
54	A9	15		z	C3	D1	E1		J
58	F6	0D		6	C5	D6	D1		O
5B	98	6D		q	C6	D3	B1		L
5D	16	5D	BS		C9	7F	C9		¨
5E	26	[3D]	EOB Ⓑ		CA	C5	A9		E
61	94	43		m	D1	4B	(C5)		
62	A7	23		x	D2	D5	A5		N
64	F0	13		0	D4	E9	95		Z

[ ] = In only.
( ) = Out only.

Correspondence Character Code 1 (Continued)

PDF Code	S/370 Code	Correspondence			PDF Code	S/370 Code	Correspondence		
		Line Code	Control Character	Graphics Character			Line Code	Control Character	Graphics Character
D8	4C	8D		¢	ED	15	[DB]	LF CR	
DB	D8	ED		Q	EE	25	[BB]	Attn	
DD	16	[DD]	BS		F0	7R	87		#
E1	D4	C3		M	87	6F	F0		?
E4	5D	93		)	F3	C6	E7		F
E2	E7	A3		X	F5	E6	D7		W
E7	E8	F3		Y	F6	C2	B7		B
E8	50	8B		&	F9	C1	CF		A
EB	3F	(EB)	EOT ©		FA	C3	AF		C
EB	79	EB			FC	37	[9F]	EOT ©	
ED	14	[DB]	RES						

[ ] = In only.
( ) = Out only.

Correspondence Character Code 2

PDF Code	S/370 Code	Correspondence Line Code	Correspondence Control Character	Correspondence Graphics Character	PDF Code	S/370 Code	Correspondence Line Code	Correspondence Control Character	Correspondence Graphics Character
01	5A	40	Ⓝ	!	67	A8	73		y
02	A3	20		t	68	F7	0B		7
04	F4	10		4	6B	5E	6B		;
07	61	70		/	6D	0D	(5B)	LF CR	
08	F5	08		5	6D	15	5B	LF CR	
0B	97	68		p	6E	25	3B	Index	
0D	14	58	RES		70	F3	07		3
0E	24	38	BYP		73	86	67		f
10	F2	04		2	75	A6	57		w
13	7E	64		=	76	82	37	Ⓢ	b
19	89	4C		'	79	81	4F		a
1A	92	2C		k	7A	83	2F		c
1C	36	1C	UC		7C	37	1F	EOT Ⓒ	
1F	06	7C	LC		7F	07	[7F]	LC	
20	F1	02		1	81	6E	C0	Ⓝ	
23	87	62		g	82	E3	A0		T
25	A2	52		s	84	5B	90		$
26	88	32		h	88	6C	88		%
29	99	4A		r	8B	D7	E8		P
2A	84	2A		d	8E	24	[88]	BYP	
2C	35	1A	RS		90	7C	84		@
2F	05	7A	Tab		93	4E	E4		+
31	A5	46		v	99	C9	CC		I
32	A4	26		u	9A	D2	AC		K
34	F9	16	EOA Ⓓ	g	9C	36	[9C]	UC	
37	60	76	Ⓨ	-	9F	06	[FC]	LC	
38	F8	0E		8	A0	4F	82		±
3B	6B	6E		.	A3	C7	E2		G
3D	17	5E	IL		A5	E2	D2		S
3D	32	(5E)	PRE		A6	C8	B2		H
3E	27	3E	PRE		A9	D9	CA		R
40	40	01	SP		AA	C4	AA		D
43	91	61		j	AF	05	[FA]	Tab	
45	96	51		o	B1	E5	C6		V
46	93	31		l	B2	E4	A6		U
49	7D	49		·	B4	4D	96	EOA Ⓓ	(
4A	85	29		e	B7	6D	F6		-
4C	34	19	PN		B8	5C	8E		•
4F	04	(79)	PF		BB	12	EE		,
51	4B	45			BE	27	[BE]	PRE	
52	95	25		n	C0	40	[81]	SP	
54	A9	15		z	C3	D1	E1		J
58	F6	0D		6	C5	D6	D1		O
5B	98	6D		q	C6	D3	B1		L
5D	16	5D	BS		C9	7F	C9		¨
5E	26	[3D]	EOB Ⓑ		CA	C5	A9		E
61	94	43		m	D1	13	C5		:
62	A7	23		x	D2	D5	A5		N
64	F0	13		0	D4	E9	95		Z

[ ] = In only.
( ) = Out only.

Correspondence Character Code 2 (Continued)

PDF Code	S/370 Code	Correspondence: Line Code	Correspondence: Control Character	Correspondence: Graphics Character	PDF Code	S/370 Code	Correspondence: Line Code	Correspondence: Control Character	Correspondence: Graphics Character
D8	4C	8D		¢	ED	15	[DB]	LF CR	
DB	D8	ED		O	EE	25	[BB]	Attn	
DD	16	[DD]	BS		F0	7B	87		#
E1	D4	C3		M	87	6F	F0		?
E4	5D	93		)	F3	C6	E7		F
E2	E7	A3		X	F5	E6	D7		W
E7	E8	F3		Y	F6	C2	B7		B
E8	50	8B		&	F9	C1	CF		A
EB	3F	(EB)	EOT Ⓒ		FA	C3	AF		C
EB	79	EB			FC	37	[9F]	EOT Ⓒ	
ED	14	[DB]	RES						

[ ] = In only.
( ) = Out only.

EBCD Character Code

PDF Code	S/370 Code	EBCD Line Code	EBCD Control Character	EBCD Graphics Character	PDF Code	S/370 Code	EBCD Line Code	EBCD Control Character	EBCD Graphics Character
01	60	40	Ⓝ	-	62	61	23		/
02	7C	20		.	64	F9	13		9
04	F8	10		8	67	89	73		i
07	88	70		h	68	F5	0B		5
08	F4	08		4	6B	85	6B		e
0B	84	68		d	6D	0D	(5B)	NL	
0D	0F	(58)	RES		6D	15	5B	NL	
0D	14	58	RES		6E	25	3B	LF	
0E	0E	(38)	BYP		70	F3	07		3
0E	24	38	BYP		73	83	67		c
10	F2	04		2	75	5B	57		$
13	82	64		b	76	01	(37)	Ⓢ	
15	D0	54	MZ		76	6B	37	Ⓢ	,
16	E0	34	RM	‡	79	97	4F		p
19	96	4C		o	7A	A7	2F		x
1A	A6	2C		w	7C	37	1F	EOT Ⓒ	
1C	36	1C	UC		7F	07	[7F]	DEL	
1F	06	7C	LC		81	6D	C0	Ⓝ	—
20	F1	02		1	82	4A	A0		¢
23	81	62		a	84	5C	90		•
25	99	52		r	87	C8	F0		H
26	A9	32		z	88	7A	88		`
29	95	4A		n	8B	C4	E8		D
2A	A5	2A		v	8D	14	[D8]	RES	
2C	35	[1A]	RS		8E	24	[B8]	BYP	
2F	05	7A	HT		90	4C	84		<
31	93	46		l	93	C2	E4		B
32	A3	26		t	99	D6	CC		O
34	02	(16)	EOA Ⓓ	#	9A	E6	AC		W
34	7B	16	EOA Ⓓ	#	9C	36	[9C]	UC	
37	4B	76	Ⓨ	.	9F	06	[FC]	LC	
38	F7	0E		7	A0	7E	82		
3B	87	6E		g	A3	C1	E2		A
3D	00	(5E)	IL		A5	D9	D2		R
3D	17	5E	IL		A6	E9	B2		Z
3D	32	(5E)	IL		A9	D5	CA		N
3E	27	3E	PRE		AA	E5	AA		V
40	40	01	SP		AC	35	[9A]	RS	
43	50	61		&	AF	05	[FA]	HT	
45	98	51		q	B1	D3	C6		L
46	A8	31		y	B2	E3	A6		T
49	94	49		m	B4	7F	96	EOA Ⓓ	"
4A	A4	29		u	B7	5F	F6	Ⓨ	'
4C	34	[19]	PN		B8	6E	8E		>
4F	04	79	PF		BB	C7	EE		G
51	92	45		k	BD	17	[DE]	IL	
52	A2	25		s	BE	27	[BE]	PRE	
54	F0	15		0	C0	40	[81]	SP	
57	C0	75	PZ		C3	4E	E1		+
58	F6	0D		6	C5	D8	D1		O
5B	86	6D		f	C6	E8	B1		Y
5D	16	5D	BS		C9	D4	C9		M
5E	03	(3D)	EOB Ⓑ		CA	E4	A9		U
5E	26	[3D]	EOB Ⓑ		CC	34	[99]	PN	
61	91	43		;	CF	04	[49]	PF	

[ ] = In only.
( ) = Out only.

EBCD Character Code (Continued)

PDF Code	S/370 Code	EBCD Line Code	EBCD Control Character	EBCD Graphics Character	PDF Code	S/370 Code	EBCD Line Code	EBCD Control Character	EBCD Graphics Character
D1	D2	C5		K	EB	C5	EB		E
D2	E2	A5		S	ED	15	[DB]	NL	
D4	5D	95		)	EE	25	[BB]	LF	
D8	7D	8D		'	F0	5E	87		;
DB	C6	ED		F	F3	C3	E7		C
DD	16	[DD]	BS		F5	5A	D7		!
DE	26	[BD]	EOB (B)		F6	4F	B7	(S)	I
E1	D1	C3		J	F9	D7	CF		P
E2	6F	A3		?	FA	E7	AF		X
E4	4D	93		(	FC	37	[9F]	EOT (C)	
E7	C9	F3		I	FF	07	[FF]	DEL	
E8	6C	8B		%					

[ ] = In only.

EBCDIC Character Code

PDF Code	S/370 Code	EBCDIC Line Code	EBCDIC Control Character	EBCDIC Graphics Character	PDF Code	S/370 Code	EBCDIC Line Code	EBCDIC Control Character	EBCDIC Graphics Character
00		00	NUL		5A		5A		!
01		01	SOH		5B		5B		$
02		02	STX		5C		5C		*
03		03	ETX		5D		5D		)
04		04	PF		5E		5E		;
05		05	HT		5F		5F		¬
06		06	LC		60		60		-
07		07	DEL		61		61		/
0A		0A	SMM		6B		6B		,
0B		0B	VT		6C		6C		%
0C		0C	FF		6D		6D		_
0D		0D	CR		6E		6E		>
0E		0E	SO		6F		6F		?
0F		0F	SI		7A		7A		:
10		10	DLE		7B		7B		#
11		11	DC1		7C		7C		@
12		12	DC2		7D		7D		'
13		13	DC3		7E		7E		=
14		14	RES		7F		7F		"
15		15	NL		81		81		a
16		16	BS		82		82		b
17		17	IL		83		83		c
18		18	CAN		84		84		d
19		19	EM		85		85		e
1A		1A	CC		86		86		f
1C	S	1C	IFS		87		87		g
1D	A	1D	IGS		88		88		h
1E	M	1E	IRS		89		89		i
1F	E	1F	IUS (ITB)		91		91		j
20		20	DS		92		92		k
21	A	21	SOS		93		93		l
22	S	22	FS		94		94		m
24		24	BYP		95		95		n
25	P	25	LF		96		96		o
26	D	26	EOB/ETB		97		97		p
27	F	27	PRE/ESC		98		98		q
2A		2A	SM		99		99		r
2D	C	2D	ENQ		A2		A2		s
2F	O	2F	BEL		A3	S	A3		t
32	D	32	SYN		A4	A	A4		u
34	E	34	PN		A5	M	A5		v
35		35	RS		A6	E	A6		w
36		36	UC		A7		A7		x
37		37	EOT		A8	A	A8		y
3C		3C	DC4		A9	S	A9		z
3D		3D	NAK		C1		C1		A
3F		3F	SUB		C2	P	C2		B
40		40	SP		C3	D	C3		C
4A		4A		¢	C4	F	C4		D
4B		4B		.	C5		C5		E
4C		4C		<	C6	C	C6		F
4D		4D		(	C7	O	C7		G
4E		4E		+	C8	D	C8		H
4F		4F		|	C9	E	C9		I
50		50		&	D1		D1		J

EBCDIC Character Code (Continued)

PDF Code	S/370 Code	EBCDIC Line Code	EBCDIC Control Character	EBCDIC Graphics Character	PDF Code	S/370 Code	EBCDIC Line Code	EBCDIC Control Character	EBCDIC Graphics Character
D2		D2		K	E7		E7		X
D3		D3		L	E8		E8		Y
D4		D4		M	E9		E9		Z
D5		D5		N	F0		F0		0
D6		D6		O	F1		F1		1
D7		D7		P	F2		F2		2
D8		D8		Q	F3		F3		3
D9		D9		R	F4		F4		4
E2		E2		S	F5		F5		5
E3		E3		T	F6		F6		6
E4		E4		U	F7		F7		7
E5		E5		V	F8		F8		8
E6		E6		W	F9		F9		9

KATAKANA Character Code

PDF Code	S/370 Code	KATAKANA Line Code	KATAKANA Control Character	KATAKANA Graphics Character	PDF Code	S/370 Code	KATAKANA Line Code	KATAKANA Control Character	KATAKANA Graphics Character
01	A3	40		ホ	64	AC	13		ヨ
02	BE	20		゛	67	97	73		ー
04	AA	10		ユ	68	84	0B		ヨ
07	88	70		ワ	6B	82	6B		イ
08	83	08		ク	6D	0D	(5B)	CR/LF	
0B	8D	68		ン	6D	15	5B	CR/LF	
0D	14	58	RES		6E	25	3B	LF	
0E	24	38	BYP		70	81	07		ア
10	9F	04		フ	73	90	67		ソ
13	8A	64		コ	75	BA	57		レ
19	AD	4C		ン	76	01	(37)	SOA	
1A	94	2C		テ	76	99	37		ネ
1C	36	1C	UC		79	8F	4F		ヒ
1F	06	7C	LC		7A	8C	2F		サ
20	98	02		ヌ	7C	37	1F	EOT	
23	92	62		チ	7F	07	7F	DEL	
25	8E	52		ス	7F	DF	(7F)	PAD	
26	93	32		ツ	81	60	C0		-
29	A5	4A		ミ	82	BF	A0		｡
2A	9E	2A		ヒ	84	F8	90		8
2C	35	1A	RSTP		87	C8	F0		H
2F	05	7A	HT		88	F4	88		4
31	AE	46		リ	8B	C4	E8		D
32	86	26		カ	8D	14	[D8]	RES	
34	89	16		ケ	8E	24	[B8]	BYP	
37	AF	76		゜	90	F2	84		2
38	A9	0E		ヤ	93	C2	E4		B
3B	87	6E		ｷ	99	D6	CC		O
3D	17	5E	IDLE		9A	E6	AC		W
3D	32	(5E)	IDLE		9C	36	[9C]	UC	
3E	0B	(3E)	VT*		9F	06	[FC]	LC	
3E	27	3E	PRE		A0	F1	82		1
40	0B	(01)	VT*		A3	C1	E2		A
40	40	01	SP		A5	D9	D2		R
43	A2	61		ヘ	A6	E9	B2		Z
45	91	51		タ	A9	D5	CA		N
46	BD	31		ソ	AA	E5	AA		V
49	A8	49		ｷ	AC	35	[9A]	RSTP	
4A	96	29		ナ	AF	05	[FA]	HT	
4C	34	(19)	PN		B1	D3	C6		L
4F	1A	(79)	PF		B2	E3	A6		T
51	9A	45		ノ	B4	BB	96		□
52	95	25		ト	B7	4B	F6		
54	BC	15		ラ	B8	F7	BE		7
58	85	0D		ム	BA	E7	AE		X
5B	9D	6D		､	BB	C7	EE		G
5D	16	5D	BKSP		BD	17	[DE]	IDLE	
5E	03	(3D)	EOB		BD	26	[BD]	EOB	
5E	26	3D	EOB		BE	27	[BE]	PRE	
61	A4	43		ゝ	C0	40	[81]	SP	
62	A7	23		メ	C3	5C	E1		•

[ ] = In only. ( ) = Out only.
*Two-character sequence

KATAKANA Character Code (Continued)

PDF Code	S/370 Code	KATAKANA Line Code	KATAKANA Control Character	KATAKANA Graphics Character	PDF Code	S/370 Code	KATAKANA Line Code	KATAKANA Control Character	KATAKANA Graphics Character
C5	D8	D1		Q	E7	C9	F3		I
C6	E8	B1		Y	E8	F5	8B		5
C9	D4	C9		M	EB	C5	EB		E
CA	E4	A9		U	ED	15	[DB]	CR/LF	
D1	D2	C5		K	EE	25	[BB]	LF	
D2	E2	A5		S	F0	F3	87		3
D4	F0	95		0	F3	C3	E7		C
D8	F6	8D		6	F5	A6	D7		ム
DB	C6	ED		F	F6	6B	B7		゛
DD	16	[DD]	BKSP		F9	D7	CF		P
E1	D1	C3		J	FC	37	[9F]	EOT	
E2	5B	A3		¥	FF	07	[FF]	DEL	
E4	F9	93		9					

[ ] = In only.

Data Interchange Code (DIC) for TWX with Even Parity (see notes 1, 2, and 3)

PDF Code	EBCDIC S/370 Code	DIC Line Code	DIC Control Character	DIC Graphics Character
00	14	(00)	NUL	
00	24	(00)	NUL	
03	03	(C0)	ETX	
05	2D	A0	WRU	
06	2E	60	ACK	
09	05	90	HT	
0A	15	50	LF	(note 4)
0A	25	50	LF	(note 5)
0C	0C	30	FF	
0F	0F	F0	SI	
11	11	88	X-on	
(11/FF)	38			
12	34	48	TP Aux On	
14	04	28	TP Aux OFF	
18	18	[18]	CTRL X	(note 7)
21	5A	84		!
22	7F	44		"
24	5B	24		$
27	7D	E4		'
28	4D	14		(
2B	4E	D4		+
2D	60	B4		-
2E	4B	74		
30	F0	0C		0
33	F3	CC		3
35	F5	AC		5
36	F6	6C		6
39	F9	9C		9
3A	7A	5C		
3C	4C	3C		<
3F	6F	FC		?
41	C1	82		A
41	81	(82)		A
42	C2	42		B
42	82	(42)		B
44	C4	22		D
44	84	(22)		D
47	C7	E2		G
47	87	(E2)		G
48	C8	12		H
48	88	(12)		H
4B	D2	D2		K
4B	92	(D2)		K
4D	D4	B2		M
4D	94	(B2)		M
4E	D5	72		N
4E	95	(72)		N
50	D7	0A		P
50	97	(0A)		P
53	E2	CA		S
53	A2	(CA)		S
55	E4	AA		U
55	A4	(AA)		U
56	E5	6A		V
56	A5	(6A)		V
59	E8	9A		Y
59	A8	(9A)		Y
5A	E9	5A		Z
5A	A9	(5A)		Z
5C	E1	(3A)		\
5F	16	FA	(note 8)	← or _
5F	6D	FA	(note 9)	← or _
84	37	[21]	EOT	
87	2F	E1	BEL	
88	0B	D1	VT	
8D	0D	B1	CR	(note 6)
8D	26	(B1)	CR	
8E	0E	71	SO	
93	3C	C9	X off	
A0	40	05	SP	
A3	7B	C5		#
A5	6C	A5		%
A6	50	65		&
A9	5D	95		)
AA	5C	55		*
AC	6B	35		,
AF	61	F5		/
B1	F1	8D		1
B2	F2	4D		2
B4	F4	2D		4
B7	F7	ED		7
B8	F8	1D		8
BB	5E	DD		:
BD	7E	BD		;
BE	5E	7D		>
C0	7C	03		@
C3	C3	C3		C
C3	83	(C3)		C
C5	C5	A3		E
C5	85	(A3)		E
C6	C6	63		F
C6	86	(63)		F
C9	C9	93		I
C9	89	(93)		I
CA	D1	53		J
CA	91	(53)		J
CC	D3	33		L
CC	93	(33)		L
CF	D6	F3		O
CF	96	(F3)		O
D1	D8	8B		Q
D1	98	(8B)		Q
D2	D9	4B		R
D2	99	(4B)		R

[ ] = In only.
( ) = Out only.

See pages 15-20 and 15-21 for all notes

Data Interchange Code (DIC) for TWX with Even Parity (see notes 1, 2, and 3) (Continued)

PDF Code	EBCDIC S/370 Code	DIC Line Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Line Code	DIC Control Character	DIC Graphics Character
D4	E3	2B		T	FF	00	(FF)		DEL
D4	A3	(2B)		T	FF	07	(FF)		DEL
D7	E6	EB		W	FF	17	(FF)		DEL
D7	A6	(EB)		W	FF	32	(FF)		DEL
D8	E7	1B		X	FF	* * *	(FF)		DEL
D8	A7	(1B)		X	(FF)	37**			
DB	79	DB		|	(FF/11)	38*			
DD	49	BB		|	(FF)	DF**			
DE	4F	7B		|				

( ) = Out only.

See pages 15-20 and 15-21 for all notes.

Notes for all Data Interchange Code tables:

1. The user specifies the parity of the transmitted data as (1) even parity, (2) odd parity, (3) mark parity (parity bit always a 1), or (4) space parity (parity bit always a 0) by coding the PARGEN operand of the GROUP macro. A table is provided for each type of parity specified. Normally TWX parity is even.
2. The three DIC translate tables apply to both DIC1 and DIC3 character sets except where noted. The DIC1 translate tables are associated with all TWX lines for which CODE=DIC1 is specified on the LINE macro or corresponding GROUP or MTALCST macro. The DIC3 translate tables are associated with all TWX lines for which CODE=DIC3 is specified on the MTALCST macro, LINE macro, or corresponding GROUP macro. The receive and transmit tables are shown on the same DIC table. Receive only (IN) entries are enclosed by [ ] while transmit only (OUT) entries are enclosed by ( ). Entries that apply to both receive and transmit are not enclosed.
3. The transmit DIC1 and DIC3 tables translate all EBCDIC code values between X'00' and X'FF' that are not shown, or noted, to a TWX colon, the same as the translation of the EBCDIC colon (X'7A'). The receive DIC1 and DIC3 tables translate all TWX code values not shown in the PDF code, or noted, to an EBCDIC semicolon (X'5F'), the same as the translation of a TWX semicolon.
4. The DIC3 receive translate table translates the TWX line-feed character to an EBCDIC new-line character (X'15'). The DIC1 and DIC3 transmit translate tables translate the EBCDIC new-line character to a TWX line-feed character.
5. The DIC1 receive translate table translates the TWX line-feed character to an EBCDIC line-feed character (X'25'). The DIC1 and DIC3 transmit translate tables translate the EBCDIC line-feed character to a TWX line-feed character.
6. The receive DIC1 and DIC3 translate tables translate the TWX carriage return (CR) character to an EBCDIC CR character (X'0D'). In addition, the DIC3 table treats the CR the same as X-Off (see note 7).

7. The receive DIC1 translate table translates the TWX CTRL-X character to an EBCDIC semicolon (X'5E'). The receive DIC3 translate table translates the TWX CTRL-X character to an EBCDIC Cancel (X'18') and treats the CTRL-X the same as X-Off; (If the CHAREC operand of the GROUP macro specifies CTRL-X as an end control character, the CTRL-X ends the receive type command with 'EOT received' status. If CHAREC specifies CTRL-X is not to be recognized as an end-control character, CTRL-X is treated as data).
8. The DIC3 receive translate table translates the TWX back-arrow character (underscore on some TWX terminals) to an EBCDIC backspace character (X'16').
9. The DIC1 receive translate table translates the TWX back-arrow character (underscore on some TWX terminals) to an EBCDIC underscore character (X'6D').

*During transmit, NCP uses the EBCDIC X'38' character for internal control to signal the end-of-data condition (count exhausted). If NCP is currently sending "answer back" or "prompt," it transmits an X-On character (EBCDIC X'11'); otherwise, NCP sets the pad flag to transmit one character time of all mark bits (X'FF').

**NCP sets the pad flag to transmit one character time of all mark bits.

***Character not stored.

Data Interchange Code (DIC) for TWX Odd Parity (see notes 1, 2, and 3)

PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character
04	37	[20]	EOT		5E	4F	7A		!
07	2F	E0	BEL		7F	00	(FE)		DEL
0B	0B	D0	VT		7F	07	(FE)		DEL
0D	0D	B0	CR	(note 6)	7F	17	(FE)		DEL
0D	26	(B0)	CR		7F	32	(FE)		DEL
0E	0E	70	SO		7F	***	[FE]		DEL
(11/FF)	38				80	14	(01)	NUL	
13	3C	C8	X-off		80	24	(01)	NUL	
20	40	04	SP		83	03	(C1)	ETX	
23	7B	C4		#	85	2D	A1	WRU	
25	6C	A4		%	86	2E	61	ACK	
26	50	64		&	89	05	91	HT	
29	5D	94		)	8A	15	51	LF	(note 4)
2A	5C	54		*	8A	25	51	LF	(note 5)
2C	6B	34		,	8C	0C	31	FF	
2F	61	F4		/	8F	0F	F1	SI	
31	F1	8C		1	91	11	89	X on	
32	F2	4C		2	92	34	49	TP Aux On	
34	F4	2C		4	94	04	29	TP Aux Off	
37	F7	EC		7	98	18	[19]	CTRL X	(note 7)
38	F8	1C		8	A1	5A	85		'
3B	5E	DC		:	A2	7F	45		"
3D	7E	BC		=	A4	5B	25		$
3E	6E	7C		>	A7	7D	E5		'
40	7C	02		@	A8	4D	15		(
43	C3	C2		C	AB	4E	D5		+
43	83	(C2)		C	AD	60	B5		-
45	C5	A2		E	AE	4B	75		.
45	85	(A2)		E	B0	F0	0D		0
46	C6	62		F	B3	F3	CD		3
46	86	(62)		F	B5	F5	AD		5
49	C9	92		I	B6	F6	6D		6
49	89	(92)		I	B9	F9	9D		9
4A	D1	52		J	BA	7A	5D		:
4A	91	(52)		J	BC	4C	3D		<
4C	D3	32		L	BF	6F	FD		?
4C	93	(32)		L	C1	C1	83		A
4F	D6	F2		O	C1	81	(83)		A
4F	96	(F2)		O	C2	C2	43		B
51	D8	8A		Q	C2	82	(43)		B
51	98	(8A)		Q	C4	C4	23		D
52	D9	4A		R	C4	84	(23)		D
52	99	(4A)		R	C7	C7	E3		G
54	E3	2A		T	C7	87	(E3)		G
54	A3	(2A)		T	C8	C8	13		H
57	E6	EA		W	C8	88	(13)		H
57	A6	(EA)		W	CB	D2	D3		K
58	E7	1A		X	CB	92	(D3)		K
58	A7	(1A)		X	CD	D4	B3		M
5B	79	DA		[	CD	94	(B3)		M
5D	49	BA		]	CE	D5	73		N

[ ] = In only.
( ) = Out only.

See pages 15-20 and 15-21 for all notes.

Data Interchange Code (DIC) for TWX Odd Parity (see notes 1, 2, and 3) (Continued)

PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character
CE	95	(73)		N	D9	A8	(9B)		Y
D0	D7	0B		P	DA	E9	5B		Z
D0	97	(0B)		P	DA	A9	(5B)		Z
D3	E2	CB		S	DC	E1	[3B]		\
D3	A2	(CB)		S	DF	16	FB	(note 8)	← or ~
D5	E4	AB		U	DF	6D	FB	(note 9)	← or ~
D5	A4	(AB)		U	(FF)	37**			
D6	E5	6B		V	(FF/11)	38*			
D6	A5	(6B)		V	(FF)	DF**			
D9	E8	9B		Y					

[ ] = In only.
( ) = Out only.
See pages 15-20 and 15-21 for all notes.

Data Interchange Code (DIC) for TWX with Mark Parity (see notes 1, 2, and 3)

PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character
80	14	(01)	NUL		BB	5E	DD		:
80	24	(01)	NUL		BC	4C	3D		<
83	03	(C1)	ETX		BD	7E	BD		=
84	37	[21]	EOT		BE	6E	7D		>
85	2D	A1	WRU		BF	6F	FD		?
86	2E	61	ACK		C0	7C	03		@
87	2F	E1	BEL		C1	C1	83		A
89	05	91	HT		C1	81	(83)		A
8A	15	51	LF	(note 4)	C2	C2	43		B
8A	25	51	LF	(note 5)	C2	82	(43)		B
8B	0B	D1	VT		C3	C3	C3		C
8C	0C	31	FF		C3	83	(C3)		C
8D	0D	B1	CR	(note 6)	C4	C4	23		D
8D	26	(B1)	CR		C4	84	(23)		D
8E	0E	71	SO		C5	C5	A3		E
8F	0F	F1	SI		C5	85	(A3)		E
91	11	89	X on		C6	C6	63		F
(11/FF)	38*				C6	86	(63)		F
92	34	49	TP Aux On		C7	C7	E3		G
93	3C	C9	X off		C7	87	(E3)		G
94	04	29	TP Aux Off		C8	C8	13		H
98	18	[19]	CTRL X	(note 7)	C8	88	(13)		H
A0	40	05	SP		C9	C9	93		I
A1	5A	85		!	C9	89	(93)		I
A2	7F	45		"	CA	D1	53		J
A3	7B	C5		#	CA	91	(53)		J
A4	5B	25		$	CB	D2	D3		K
A5	6C	A5		%	CB	92	(D3)		K
A6	50	65		&	CC	D3	33		L
A7	7D	E5		'	CC	93	(33)		L
A8	4D	15		(	CD	D4	B3		M
A9	5D	95		)	CD	94	(B3)		M
AA	5C	55		*	CE	D5	73		N
AB	4E	D5		+	CE	95	(73)		N
AC	6B	35		,	CF	D6	F3		O
AD	60	B5		-	CF	96	(F3)		O
AE	4B	75		.	D0	D7	0B		P
AF	61	F5		/	D0	97	(0B)		P
B0	F0	0D		0	D1	D8	8B		Q
B1	F1	8D		1	D1	98	(8B)		Q
B2	F2	4D		2	D2	D9	48		R
B3	F3	CD		3	D2	99	(4B)		R
B4	F4	2D		4	D3	E2	CB		S
B5	F5	AD		5	D3	A2	(CB)		S
B6	F6	6D		6	D4	E3	2B		T
B7	F7	ED		7	D4	A3	(2B)		T
B8	F8	1D		8	D5	E4	AB		U
B9	F9	9D		9	D5	A4	(AB)		U
BA	7A	5D			D6	E5	6B		V

[ ] = In only.
( ) = Out only.
See pages 15-20 and 15-21 for all notes.

Data Interchange Code (DIC) for TWX with Mark Parity (see notes 1, 2, and 3) (Continued)

PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character
D6	A5	(6B)		V	DE	4F	7B		|
D7	E6	EB		W	DF	16	FB	(note 8)	← or –
D7	A6	(EB)		W	DF	6D	FB	(note 9)	← or –
D8	E7	1B		X	FF	00	(FF)		DEL
D8	A7	(1B)		X	FF	07	(FF)		DEL
D9	E8	9B		Y	FF	17	(FF)		DEL
D9	A8	(9B)		Y	FF	32	(FF)		DEL
DA	E9	5B		Z	FF	• • •	(FF)		DEL
DA	A9	(5B)		Z	(FF)	37••			
DB	79	DB		[	(FF/11)	38•			
DC	E1	[3B]		\	(FF)	DF••			
DD	49	BB		]					

[ ] = In only.
( ) = Out only.
See pages 15-20 and 15-21 for all notes.

Data Interchange Code (DIC) for TWX with Space Parity (see notes 1, 2, and 3)

PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character
00	14	(01)	NUL		3A	7A	5D		
00	24	(01)	NUL		3B	5E	DD		.
03	03	(C1)	ETX		3C	4C	3D		<
04	37	[21]	EOT		3D	7E	BD		
05	2D	A1	WRU		3E	6E	7D		>
06	2E	61	ACK		3F	6F	FD		?
07	2F	E1	BEL		40	7C	03		@
09	05	91	HT		41	C1	83		A
0A	15	51	LF	(note 4)	41	81	(83)		A
0A	25	51	LF	(note 5)	42	C2	43		B
0B	0B	D1	VT		42	82	(43)		B
0C	0C	31	FF		43	C3	C3		C
0D	0D	B1	CR	(note 6)	43	83	(C3)		C
0D	26	(B1)	CR		44	C4	23		D
0E	0E	71	SO		44	84	(23)		D
0F	0F	F1	SI		45	C5	A3		E
11	11	89	X on		45	85	(A3)		E
11/7F	38*				46	C6	63		F
12	34	49	TP Aux On		46	86	(63)		F
13	3C	C9	X off		47	C7	E3		G
14	04	29	TP Aux Off		47	87	(E3)		G
18	18	[19]	CTRL X	(note 7)	48	C8	13		H
20	40	05	SP		48	88	(13)		H
21	5A	85			49	C9	93		I
22	7F	45			49	89	(93)		I
23	7B	C5		#	4A	D1	53		J
24	5B	25		$	4A	91	(53)		J
25	6C	A5		%	4B	D2	D3		K
26	50	65		&	4B	92	(D3)		K
27	7D	E5			4C	D3	33		L
28	4D	15		(	4C	93	(33)		L
29	5D	95		)	4D	D4	B3		M
2A	5C	55		*	4D	94	(B3)		M
2B	4E	D5		+	4E	D5	73		N
2C	6B	35		,	4E	95	(73)		N
2D	60	B5		-	4F	D6	F3		O
2E	4B	75		.	4F	96	(F3)		O
2F	61	F5		/	50	D7	0B		P
30	F0	0D		0	50	97	(0B)		P
31	F1	8D		1	51	D8	8B		Q
32	F2	4D		2	51	98	(8B)		Q
33	F3	CD		3	52	D9	4B		R
34	F4	2D		4	52	99	(4B)		R
35	F5	AD		5	53	E2	CB		S
36	F6	6D		6	53	A2	(CB)		S
37	F7	ED		7	54	E3	2B		T
38	F8	1D		8	54	A3	(2B)		T
39	F9	9D		9	55	E4	AB		U

[ ] = In only.
( ) = Out only.
See pages 15-20 and 15-21 for all notes

Data Interchange Code (DIC) for TWX with Space Parity (see notes 1, 2, and 3) (Continued)

PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character	PDF Code	EBCDIC S/370 Code	DIC Code	DIC Control Character	DIC Graphics Character
55	A4	(AB)		U	5D	49	BB		]
56	E5	6B		V	5E	4F	7B		[
56	A5	(6B)		V	5F	16	FB	(note 8)	← or –
57	E6	EB		W	5F	6D	FB	(note 9)	← or –
57	A6	(EB)		W	7F	00	(FF)		DEL
58	E7	1B		X	7F	07	(FF)		DEL
58	A7	(1B)		X	7F	17	(FF)		DEL
59	E8	9B		Y	7F	32	(FF)		DEL
59	A8	(9B)		Y	7F	* * *	(FF)		DEL
5A	E9	5B		Z	7F	37**			
5A	A9	(5B)		Z	7F/11	38*			
5B	79	DB		[	7F	DF**			
5C	E1	(3B)		\					

[ ] = In only.
( ) = Out only.

See pages 15-20 and 15-21 for all notes.

Notes for all USASCII character code tables for TWX:

1. The user specifies the parity of the transmitted data as (1) even parity, (2) odd parity, (3) mark parity (parity bit always a 1), or (4) space parity (parity bit is always a 0) by coding the PARGEN operand of the GROUP macro. A table is provided for each type of parit specified.
2. The three USASCII translate tables are associated with all TWX lines for which CODE=ASCII is specified in the MTALCST macro, LINE macro, or corresponding GROUP macro.
3. The values in the reversed code column are the USASCII bits arranged in reverse order – 1, 2, 3, 4, 5, 6, 7, P. The user can use these values to specify the CHAREC operand of the GROUP macro. The normal (non-reversed) USASCII code values are the same as the values in the PDF code column.
4. For transmit, all EBCDIC code values between X'00' and X'FF' not shown are translated to an EBCDIC colon (X'7A').
5. For receive, all USASCII code values not shown in the PDF column are translated to an EBCDIC semicolon (X'5E'), the same as the translation of an USASCII semicolon. The USASCII parity bit in PDF bit 0 is ignored for translation.

*During transmit, NCP uses the EBCDIC X'38' character for internal control to signal the end-of-data condition (count exhausted). If NCP is currently sending 'answer back' or 'prompt,' a DC1 character is sent; otherwise, NCP sets the pad flag to transmit one character time of all mark bits (X'FF').

**NCP sets the pad flag to transmit one character time of all mark bits (X'FF').

***This character appears on terminal keyboards as ^ or ¬ or ↑.

†EBCDIC underscore.

††Character not stored.

†††For the EBCDIC character X'37' (EOT) a X'84' (EOT) is transmitted. If this character is sent the TWX (33/35) will physically disconnect.

USASCII Character Code for TWX with Even Parity (see notes 1 and 2)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
00	00	00	NUL		6C	93	36		`
03	03	C0	ETX		6F	96	F6		o
05	2D	A0	ENQ		71	98	8E		q
06	2E	60	ACK		72	99	4E		r
09	05	90	HT		74	A3	2E		t
0A	15	(50)	LF		77	A6	EE		w
0A	25	50	LF		78	A7	1E		x
0C	0C	30	FF		7B	C0	DE		{
0F	0F	F0	SI		7D	D0	BE		|
11	11	88	DC1		7E	A1	7E		~
(11/FF)	38*				81	01	81	SOH	
12	12	48	DC2		82	02	41	STX	
14	3C	28	DC4		84	37††	21	EOT	
17	26	E8	ETB		87	2F	E1	BEL	
18	18	18	CAN		88	16	11	BS	
1B	27	D8	ESC		8B	0B	D1	VT	
1D	1D	B8	GS		8D	0D	B1	CR	
1E	1E	78	RS		8E	0E	71	SO	
21	4F	84		!	90	10	09	DLE	
22	7F	44		"	93	13	C9	DC3	
24	5B	24		$	95	3D	A9	NAK	
27	7D	E4		'	96	32	69	SYN	
28	4D	14		(	99	19	99	EM	
2B	4E	D4		+	9A	3F	59	SUB	
2D	60	B4		-	9C	1C	39	FS	
2E	4B	74			9F	1F	F9	US	
30	F0	0C		0	A0	40	05	SP	
33	F3	CC		3	A3	7B	C5		#
35	F5	AC		5	A5	6C	A5		%
36	F6	6C		6	A6	50	65		&
39	F9	9C		9	A9	5D	95		)
3A	7A	5C			AA	5C	55		*
3C	4C	3C		<	AC	6B	35		,
3F	6F	FC		?	AF	61	F5		/
41	C1	82		A	B1	F1	8D		1
42	C2	42		B	B2	F2	4D		2
44	C4	22		D	B4	F4	2D		4
47	C7	E2		G	B7	F7	ED		7
48	C8	12		H	B8	F8	1D		8
4B	D2	D2		K	BB	5E	DD		
4D	D4	B2		M	BD	7E	BD		
4E	D5	72		N	BE	6E	7D		>
50	D7	0A		P	C0	7C	03		@
53	E2	CA		S	C3	C3	C3		C
55	E4	AA		U	C5	C5	A3		E
56	E5	6A		V	C6	63			F
59	E8	9A		Y	C9	C9	93		I
5A	E9	5A		Z	CA	D1	53		J
5C	E0	3A		\	CC	D3	33		L
5F	6D†	FA		_	CF	D6	F3		O
60	79	06		`	D1	D8	8B		Q
63	83	C6		c	D2	D9	4B		R
65	85	A6		e	D4	E3	2B		T
66	86	66		f	D7	E6	EB		W
69	89	96		i	D8	E7	1B		X
6A	91	56		j	DB	4A	DB		[

( ) = Out only.

See pages 15-28 for all notes.

USASCII Character Code for TWX with Even Parity (see notes 1 and 2) (Continued)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
DD	5A	8B		]	F3	A2	CF		s
DE	5F	7B		↑	F5	A4	AF		u
E1	81	87		a	F6	A5	6F		v
E2	82	47		b	F9	A8	9F		y
E4	84	27		d	FA	A9	5F		z
E7	87	E7		g	FC	6A	3F		
E8	88	17		h	FF	07††	FF	DEL	
EB	92	D7		k	FF	17	(FF)	DEL	
ED	94	B7		m	(FF)	00**		NUL	
EE	95	77		n	(FF)	DF**			
F0	97	0F		p	(FF/11)	38*			

( ) = Out only

See page 15 28 for all notes

USASCII Character Code for TWX with Odd Parity (see notes 1 and 2)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
01	01	80	SOH		6E	95	76		n
02	02	40	STX		70	97	0E		p
04	37	20	EOT		73	A2	CE		s
07	2F	E0	BEL		75	A4	AE		u
08	16	10	BS		76	A5	6E		v
0B	0B	D0	VT		79	A8	9E		y
0D	0D	B0	CR		7A	A9	5E		z
0E	0E	70	SO		7C	6A	3E		|
10	10	08	DLE		7F	071†	FE	DEL	
13	13	C8	DC3		7F	17	(FF)	DEL	
15	3D	A8	NAK		80	00	01	NUL	
16	32	68	SYN		83	03	C1	ETX	
19	19	98	EM		85	2D	A1	ENQ	
1A	3F	58	SUB		86	2E	61	ACK	
1C	1C	38	FS		89	05	91	HT	
1F	1F	F8	US		8A	15	(51)	LF	
20	40	04	SP		8A	25	51	LF	
23	7B	C4		#	8C	0C	31	FF	
25	6C	A4		%	8F	0F	F1	SI	
26	50	64		&	91	11	89	DC1	
29	5D	94		)	(91/FF)	38*			
2A	5C	54		*	92	12	49	DC2	
2C	6B	34		,	94	3C	29	DC4	
2F	61	F4		/	97	26	E9	ETB	
31	F1	8C		1	98	18	19	CAN	
32	F2	4C		2	9B	27	D9	ESC	
34	F4	2C		4	9D	1D	B9	GS	
37	F7	EC		7	9E	1E	79	RS	
38	F8	1C		8	A1	4F	85		!
3B	5E	DC		:	A2	7F	45		"
3D	7E	BC		=	A4	5B	25		$
3E	6E	7C		>	A7	7D	E5		'
40	7C	02		@	A8	4D	15		(
43	C3	C2		C	AB	4E	D5		+
45	C5	A2		E	AD	60	B5		-
46	C6	62		F	AE	4B	75		
49	C9	92		I	B0	F0	0D		0
4A	D1	52		J	B3	F3	CD		3
4C	D3	32		L	B5	F5	AD		5
4F	D6	F2		O	B6	F6	6D		6
51	D8	8A		Q	B9	F9	9D		9
52	D9	4A		R	BA	7A	5D		
54	E3	2A		T	BC	4C	3D		<
57	E6	EA		W	BF	6F	FD		?
58	E7	1A		X	C1	C1	83		A
5B	4A	DA		[	C2	C2	43		B
5D	5A	BA		]	C4	C4	23		D
5E	5F	7A		^ •••	C7	C7	E3		G
61	81	86		a	C8	C8	13		H
62	82	46		b	CB	D2	D3		K
64	84	26		d	CD	D4	B3		M
67	87	E6		g	CE	D5	73		N
68	88	16		h	D0	D7	0B		P
6B	92	D6		k	D3	E2	CB		S
6D	94	B6		m	D5	E4	AB		U

( ) = Out only.
See page 15-28 for all notes.

USASCII Character Code for TWX with Odd Parity (see notes 1 and 2) (Continued)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
D6	E5	6B		V	EF	96	F7		o
D9	E8	9B		Y	F1	98	8F		q
DA	E9	5B		Z	F2	99	4F		r
DC	E0	3B		\	F4	A3	2F		t
DF	6D†	FB		←	F7	A6	EF		w
E0	79	07		'	F8	A7	1F		x
E3	83	C7		c	FB	C0	DF		|
E5	85	A7		e	FD	D0	BF		|
E6	86	67		f	FE	A1	7F		~
E9	89	97		i	(FF)	00**		NUL	
EA	91	57		j	(FF)	DF**			
EC	93	37		l	(FF/91)	38*			

( ) = Out only.
See page 15-28 for all notes.

USASCII Character Code for TWX with Mark Parity (see notes 1 and 2)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
80	00	01	NUL		B0	F0	0D		0
81	01	81	SOH		B1	F1	8D		1
82	02	41	STX		B2	F2	4D		2
83	03	C1	ETX		B3	F3	CD		3
84	37††††	21	EOT		B4	F4	2D		4
85	2D	A1	ENQ		B5	F5	AD		5
86	2E	61	ACK		B6	F6	6D		6
87	2F	E1	BEL		B7	F7	ED		7
88	16	11	BS		B8	F8	1D		8
89	05	91	HT		B9	F9	9D		9
8A	15	(51)	LF		BA	7A	5D		:
8A	25	51	LF		BB	5E	DD		;
8B	0B	D1	VT		BC	4C	3D		<
8C	0C	31	FF		BD	7E	BD		=
8D	0D	B1	CR		BE	6E	7D		>
8E	0E	71	SO		BF	6F	FD		?
8F	0F	F1	SI		C0	7C	03		@
90	10	09	DLE		C1	C1	83		A
91	11	89	DC1		C2	C2	43		B
(91/FF)	38*				C3	C3	C3		C
92	12	49	DC2		C4	C4	23		D
93	13	C9	DC3		C5	C5	A3		E
94	3C	29	DC4		C6	C6	63		F
95	3D	A9	NAK		C7	C7	E3		G
96	32	69	SYN		C8	C8	13		H
97	26	E9	ETB		C9	C9	93		I
98	18	19	CAN		CA	D1	53		J
99	19	99	EM		CB	D2	D3		K
9A	3F	59	SUB		CC	D3	33		L
9B	27	D9	ESC		CD	D4	B3		M
9C	1C	39	FS		CE	D5	73		N
9D	1D	B9	GS		CF	D6	F3		O
9E	1E	79	RS		D0	D7	0B		P
9F	1F	F9	US		D1	D8	8B		Q
A0	40	05	SP		D2	D9	4B		R
A1	4F	85		!	D3	E2	CB		S
A2	7F	45		"	D4	E3	2B		T
A3	7B	C5		#	D5	E4	AB		U
A4	5B	25		$	D6	E5	6B		V
A5	6C	A5		%	D7	E6	EB		W
A6	50	65		&	D8	E7	1B		X
A7	7D	E5		'	D9	E8	9B		Y
A8	4D	15		(	DA	E9	5B		Z
A9	5D	95		)	DB	4A	DB		[
AA	5C	55		*	DC	E0	3B		\
AB	4E	D5		+	DD	5A	BB		]
AC	6B	35		,	DE	5F	7B		^ ***
AD	60	B5		-	DF	6D†	FB		•
AE	4B	75		.	E0	79	07		'
AF	61	F5		/	E1	81	87		a

( ) = Out only.

See page 15-28 for all notes.

USASCII Character Code for TWX with Mark Parity (see notes 1 and 2) (Continued)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
E2	82	47		b	F3	A2	CF		s
E3	83	C7		c	F4	A3	2F		t
E4	84	27		d	F5	A4	AF		u
E5	85	A7		e	F6	A5	6F		v
E6	86	67		f	F7	A6	EF		w
E7	87	E7		g	F8	A7	1F		x
E8	88	17		h	F9	A8	9F		y
E9	89	97		i	FA	A9	5F		z
EA	91	57		j	FB	C0	DF		{
EB	92	D7		k	FC	6A	3F		|
EC	93	37		l	FD	D0	BF		}
ED	94	B7		m	FE	A1	7F		~
EE	95	77		n	FF	07††	FF	DEL	
EF	96	F7		o	FF	17	(FF)	DEL	
F0	97	0F		p	(FF)	00**		NUL	
F1	98	8F		q	(FF)	DF**			
F2	99	4F		r	(FF/91)	38*			

( ) = Out only.

See page 15-28 for all notes

USASCII Character Code for TWX with Space Parity (see notes 1 and 2)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
00	00	01	NUL		30	F0	0D		0
01	01	81	SOH		31	F1	8D		1
02	02	41	STX		32	F2	4D		2
03	03	C1	ETX		33	F3	CD		3
04	37↑↑↑	21	EOT		34	F4	2D		4
05	2D	A1	ENQ		35	F5	AD		5
06	2E	61	ACK		36	F6	6D		6
07	2F	E1	BEL		37	F7	ED		7
08	16	11	BS		38	F8	1D		8
09	05	91	HT		39	F9	9D		9
0A	15	(51)	LF		3A	7A	5D		
0A	25	51	LF		3B	5E	DD		
0B	0B	D1	VT		3C	4C	3D		<
0C	0C	31	FF		3D	7E	BD		=
0D	0D	B1	CR		3E	6E	7D		>
0E	0E	71	SO		3F	6F	FD		?
0F	0F	F1	SI		40	7C	03		@
10	10	09	DLE		41	C1	83		A
11	11	89	DC1		42	C2	43		B
(11/7F)	38*				43	C3	C3		C
12	12	49	DC2		44	C4	23		D
13	13	C9	DC3		45	C5	A3		E
14	3C	29	DC4		46	C6	63		F
15	3D	A9	NAK		47	C7	E3		G
16	32	69	SYN		48	C8	13		H
17	26	E9	ETB		49	C9	93		I
18	18	19	CAN		4A	D1	53		J
19	19	99	EM		4B	D2	D3		K
1A	3F	59	SUB		4C	D3	33		L
1B	27	D9	ESC		4D	D4	B3		M
1C	1C	39	FS		4E	D5	73		N
1D	1D	B9	GS		4F	D6	F3		O
1E	1E	79	RS		50	D7	0B		P
1F	1F	F9	US		51	D8	8B		Q
20	40	05	SP		52	D9	4B		R
21	4F	85		!	53	E2	CB		S
22	7F	45		"	54	E3	2B		T
23	7B	C5		#	55	E4	AB		U
24	5B	25		$	56	E5	6B		V
25	6C	A5		%	57	E6	EB		W
26	50	65		&	58	E7	1B		X
27	7D	E5		'	59	E8	9B		Y
28	4D	15		(	5A	E9	5B		Z
29	5D	95		)	5B	4A	DB		[
2A	5C	55		*	5C	E0	3B		\
2B	4E	D5		+	5D	5A	BB		]
2C	6B	35		,	5E	5F	7B		^•••
2D	60	B5		-	5F	6D↑	FB		•
2E	4B	75		.	60	79	07		·
2F	61	F5		/	61	81	87		a

( ) = Out only

See page 15-28 for all notes

USASCII Character Code for TWX with Space Parity (see notes 1 and 2) (Continued)

PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character	PDF Code	EBCDIC Code (NCP only)	USASCII Reversed Code (note 3)	USASCII Control Character	USASCII Graphics Character
62	82	47		b	73	A2	CF		s
63	83	C7		c	74	A3	2F		t
64	84	27		d	75	A4	AF		u
65	85	A7		e	76	A5	6F		v
66	86	67		f	77	A6	EF		w
67	87	E7		g	78	A7	1F		x
68	88	17		h	79	A8	9F		y
69	89	97		i	7A	A9	5F		z
6A	91	57		j	7B	C0	DF		{
6B	92	D7		k	7C	6A	3F		:
6C	93	37		l	7D	D0	BF		}
6D	94	B7		m	7E	A1	7F		~
6E	95	77		n	7F	07††	FF	DEL	
6F	96	F7		o	7F	17	(FF)	DEL	
70	97	0F		p	(7F)	00**		NUL	
71	98	8F		q	(7F)	DF**			
72	99	4F		r	(7F/11)	38*			

( ) = Out only.

See page 15-28 for all notes

Section 16. Examples of Polling and Addressing

1030

Polling

Controller	1030	
(C)	⟶	Reset terminals
B	⟶	Terminal address
⟵	(N)	Negative reply (not ready)
F	⟶	Terminal address
⟵	(D)	Ready to send message
⟵	Text	Message
⟵	(B)	End of block
(Y)	⟶	Positive message received
(C)	⟶	End of transmission (reset)

Addressing

Controller	1030	
(C)	⟶	Reset terminals
(S)	⟶	Indicates message for a printer
B	⟶	Terminal address
1	⟶	Conditions 1031 to answer
⟵	(Y)	Ready to receive
(D)	⟶	End of address (text mode)
Text	⟶	Message (Data characters must be separated by three PAD characters. PAD characters keep line at Mark level).
(B)	⟶	End of Block
⟵	(Y)	Positive message received
(C)	⟶	End of transmission (reset)

1050

Polling

Controller	1050	
C	→	Reset terminals
A	→	Terminal address
5	→	Component select code for keyboard
←	N	Negative reply
C	→	Reset, resume polling or addressing
B	→	Terminal address
6	→	Component select code for reader 1
←	D	Reader ready to start message
←	Text	Message
←	B	End of block
←	LRC	Check character generated by the 1050
Y	→	Positive message received (no data check)
←	C	End of transmission

Addressing

Controller	1050	
C	→	Reset terminals
A	→	Terminal address
1	→	Component select code for printer 1
←	Y	Terminal ready to receive
D	→	End of address
Text	→	Message
B	→	End of block
LRC	→	Check character generated by the controller
←	N	Negative message received (detected a data check).
Text	→	Message repeated (program controlled)
B	→	End of block
LRC	→	Check character generated by the controller
←	Y	Positive message received (no data check).
C	→	End of transmission (reset)

Polling**

Controller	2740
C	Resets terminals
A	Terminal address
SP	Space character
D	End of address
Text	Message
B	End of block
LRC	Check character generated by the 2740
Y	Positive reply
C	End of transmission

Addressing**

Controller	2740
C	Resets terminals
S	Address select
A	Terminal address
SP	Space character
Y	Positive reply (ready to receive)
D	End of address
Text	Message
B	End of block
LRC*	Check character generated by the controller
Y	Positive reply (message ok)
C	End of transmission

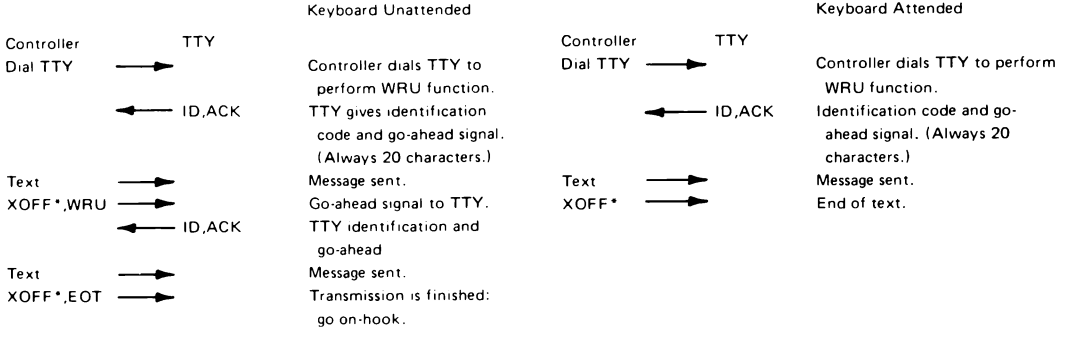
*Used only on 2740 equipped with VRC LRC checking feature.

**Assumes 2740, station control, and record checking.

2741 Transmit/Receive Sequence

Models 33 and 35 Teletypewriters

(Assume point-to-point, dial-up (switched network))



*May be followed by a maximum of three delete characters.

Paper Tape

*May be followed by a maximum of three delete characters.

Section 17. Record Maintenance Service (RECMS) Request/Response Unit (RU) Formats

The network control program sends unsolicited RECMS PIUs to the access method to record the following conditions:

- BSC/SS device or line errors. (17-3)
- BSC/SS station statistic. (17-5)
- SNA link permanent errors. (17-7)
- SNA station permanent errors. (17-9)
- BSC 3270 status/sense. (17-11)
- SNA statistics. (17-12)
- Intensive-mode record for SNA station error. (17-14)
- Pseudo last intensive-mode record. (17-16)

The access method records the RECMS record on SYS1.LOGREC. The FE/customer can use IFCERP0 to edit and print SYS1.LOGREC to obtain the desired records.

NCP RECMS records are identified by the second 2 bytes of the request/response unit (RU) in the FID1 PIU. For RECMS records, RU byte 1 = X'03' and RU byte 2 = X'81'. Bytes 3 and 4 of the RU contain the network address of the failing unit, and byte 5 is the beginning of the RECMS record.

The text portion of the RECMS records consists of a field of up to 52(34) bytes. The third byte of the field is the recording mode byte, which is used to differentiate among the types of NCP RECMS records. The fourth byte, the record ID byte, is always set to X'25' indicating to the host that this is a 3725 RECMS record.

The NCP for the 3725 does not send RECMS PIUs to the host for channel adapter-, scanner-, program-, and hardware errors as the NCP does in the 3705. Instead, NCP issues the BDCRP macro (1) to obtain a check record pool (CRP) unit to insert information pertaining to the error that occurred, (2) to cause a box error record (BER) to be built, and (3) to send the BER to MOSS where the information is stored on a diskette. The BER is not sent to the host. The operator/FE may obtain the error information by executing console procedures. See the BER control block for the formats of the error records when they are in the CRP.

Note: The miscellaneous data recorder (MDR) record is a subset of the RECMS record. NCP code may refer to a RECMS record by the term MDR record.

Record Maintenance Statistic (RECMS) RU Format for Permanent BSC/SS Device or Line Errors.

The line error recorder routine (CXDILER) and LPDA terminator (CXDKCET) build this RECMS RU.

RECMS PIU Offset

55(37)						
0(0) Network services X'01'						
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of the BSC/SS device or line.		5(5) Relative line number (in hex) of the line interface address** (CCBBAR)*		7(7) Recording Mode=X'80'	8(8) Record ID=X'25'
9(9) Level of information changes X'01'	10(A) Reserved			13(D) BTU command (BCHCMD)*	14(E) BTU modifier (BCHMOD)*	15(F) BTU flags (BCHSFLAG)*	
17(11) IOB command (IOBCMAND)*	18(12) IOB modifiers (IOBCMODS)*		20(14) IOB immediate control flags (IOBIMCTL)*	21(15) IOB status (IOBSTAT)*		23(17) IOB extended status (IOBEXTST)*	24(18) IOB initial error status byte 0. (IOBERST)*

*Indicates the control block field from which this RECMS RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for Permanent BSC/SS Device or Line Errors (Cont.)

25(19) IOB initial error status byte 1. (IOBERST)*	26(1A) IOB initial error extended status (IOBEREST)*	27(1B) Transmission counter. (DVBSDRT)*		29(1D) Reserved		31(1F) Temporary error counter (DVBSDRE)*	
33(21) 2740 graphic response byte**	34(22) Device features (DVBFEAT1)*	(DVBFEAT2)*	36(24) Device type (DVBTYPE)*	37(25) NPDA alarm parameter	38(26) Link subsystem type***	39(27) LPDA control (1st byte)	40(28) LPDA remote status (1st byte)†
41(29) LPDA remote status (1st byte)†	42(2A) LPDA local status†		44(2C) LPDA local and remote self-test results.†				

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**2740 graphic response byte is zeroed if not applicable.

***Link subsystem type: X'00'—No link subsystem data.
X'01'—Link Problem Determination Aid (LPDA) test data.

†These fields are not present for a line without LPDA testing facilities or for which the LPDA test could not be initiated. The LPDA control byte is always present. If the remaining fields are not present, the control byte is marked "execution not attempted" for all tests.

Record Maintenance Statistic (RECMS) RU Format for BSC/SS Station Statistics

The line error recorder routine (CXDILER) and LPDA terminator (CXDKCET) build this RECMS RU.

RECMS PIU offset 55(37)					
					0(0) Network services X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of the BSC/SS station	5(5) Relative line number (in hex) of the line interface address** (CCBBAR)*	7(7) Recording mode X'81'	8(8) Record ID=X'25'
9(9) Level of information changes X'01'	10(A) Reserved		13(D)		
Hex Zeros					

*Indicates the control block field from which the RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions).

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for BSC/SS Station Statistics (Cont.)

Hex Zeros		27(1B) Transmission Counter (DVBSDRT)*		29(1D) Reserved		31(1F) Temporary error counter (DVBSDRE)*	
	34(22) Device features (DVBFEAT1)* (DVBFEAT2)*		36(24) Device type (DVBTYPE)*	37(25) NPDA alarm parameter	38(26) Link subsystem type**	39(27) LPDA control (1st byte)	40(28) LPDA remote status (1st byte)***
41(29) LPDA remote status (2nd byte)***	42(2A) LPDA local status***		44(2C) Reserved				

*Indicates the control block field from which the RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions).

**Link subsystem type: X'00'—No link subsystem data.
X'01'—Link Problem Determination Aid (LPDA) test data.

***These fields are not present for a line without LPDA testing facilities or for which the LPDA test could not be initiated. The LPDA control byte is always present. If the remaining fields are not present, the control byte is marked "execution not attempted" for all tests.

Record Maintenance Statistic (RECMS) RU Format for SNA Link Permanent Errors

The line error recorder routine (CXDILER) and LPDA terminator (CXDKCET) build this RECMS RU.

RECMS PIU offset **55(37)**

					0(0) Network services X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of SNA link.	5(5) Relative line number (in hex) of the line interface address** (CCBBAR)*	7(7) Recording mode X'82'	8(8) Record ID=X'25'
9(9) Level of information changes X'02'	Hex zeros				

17(11) I/O command (LXBCMAND)*	18(12) Command modifier field (LXBCMODS)*	20(14) Immed. ctrl command field (LXBIMCTL)*	21(15) Current error status (LXBSTAT)*	23(17) Extended error status (LXBEXTST)*	24(18) 1st error status (byte 1) (LXBERST)*
25(19) Hold SDLC status (byte 2) (LXBHSTAT)*	26(1A) 1st error extended status (LXBEREST)*	Hex zeros	30(1E) Received BLU command field (LXBRBLUC)*	Hex zeros	

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for SNA Link Permanent Errors (Cont.)

Hex zeros	34(22) ** Transmit BLU command. (CCBCFLD)*					39(27) Control flags (CCBRSPON)*	40(28) Line type (CCBTYPE)*
41(29) *** Command received from sec. station.	42(2A) *** N(R) and N(S) received from sec. station	43(2B) *** Command reject reason	44(2C)††† Dial control flags (CCBTYPEC)*	Hex zeros			
57(39)††† X.21 call progress signals.		59(3B) NPDA alarm parameter	60(3C) Link subsystem type†	61(3D) LPDA control (1st byte)	62(3E) LPDA remote status††		64(40) LPDA local status (1st byte)††
65(41) LPDA local status (2nd byte)††	66(42) LPDA local and remote self-test results††						

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**This field contains the transmit BLU command for a duplex link; contains X'00' for a half-duplex link.

***This field contains the indicated data only if a command reject caused the RECMS; otherwise, contains X'00'.

†Link subsystem type: X'00'—No link subsystem data.
X'01'—Link Problem Determination Aid (LPDA) test data.

††These fields are not present for a line without LPDA testing facilities or for which the LPDA test could not be initiated. The LPDA control byte is always present. If the remaining bytes are not present, the control byte is marked "execution not attempted" for all tests.

Record Maintenance Statistic (RECMS) RU Format for SNA Station Permanent Errors

The line error recorder routine (CXDILER) and LPDA terminator (CXDKCET) build this RECMS RU.

RECMS PIU offset **55(37)**

							0(0) Network services X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of the SDLC station		5(5) Relative line number (in hex) of the line interface address** (CCBBAR)*		7(7) Recording mode X'83'	8(8) Record ID=X'25'
9(9) Level of information changes X'02'	10(A) Reserved			13(D) Service-seeking control flags (SCBSSCF)*		15(F) Output control flag (SCBOCF)*	16(10) Reserved
17(11) I/O command (LXBCMAND)*	18(12) Command modifier field (LXBCMODS)*		20(14) Immed. ctrl command field (LXBIMCTL)*	21(15) Current error status (LXBSTAT)*		23(17) Extended error status (LXBEXTST)*	24(18) 1st error status (byte 1) (LXBERST)*
25(19) Hold SDLC status (byte 2) (LXBHSTAT)*	26(1A) 1st error extended status (LXBEREST)*	27(1B) Total I-format transmission counter (SCBTCNT)*		29(1D) Reserved	30(1E) Received BLU command field (LXBRBLUC)*	31(1F) Total retry counter (SCBTRTCT)*	

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for SNA Station Permanent Errors (Cont.)

33(21) Station type (SCBTYPE)*	34(22) ** Transmit BLU command (CCBCFLD)*	35(23) Current outstanding count (SCBCOC)*	36(24) Pass limit (SCBPCNT)*	37(25) Receive count (bits 4,5,6) (SCBNR)*	38(26) Send count (bits 4,5,6) (SCBNS)*	39(27) Control flags (CCBRSPON)*	40(28) Line type (CCBTYPE)*
41(29) Command received from sec. station	42(2A) N(R) and N(S) received from sec. station	43(2B) Command reject reason	44(2C) Reserved	45(2D) Receive I-format error counter (SCBRECNT)*		47(2F) Total transmission counter (SCBTPCNT)*	
49(31) I-format received counter (error free) (SCBRCNT)*		51(33) S-format received counter (error free) (SCBRPCNT)*		53(35) Total ACK'd I-format counter (SCBTIACT)*		55(37) Total I-format retransmissions counter (SCBTINCT)*	
57(39) Reserved		59(3B) NPDA alarm parameter	60(3C) Link subsystem type†	61(3D) LPDA control (1st byte)	62(3E) LPDA remote status††		64(40) LPDA local status†† (1st byte)
65(41) LPDA local status†† (2nd byte)	66(42) LPDA local and remote self-test results.††						

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**This field contains the transmit BLU command for a duplex link; contains X'00' for a half-duplex link.

†Link subsystem type: X'00'—No link subsystem data.
X'01'—Link Problem Determination Aid (LPDA) test data.

††These fields are not present for a line without LPDA testing facilities or for which the LPDA test could not be initiated. The LPDA control byte is always present. If the remaining fields are not present, the control byte is marked "execution not attempted" for all tests.

Record Maintenance Statistic (RECMS) RU Format for BSC 3270 Status/Sense

The line error recorder routine (CXDILER) builds this RECMS RU.

RECMS PIU offset **55(37)**

						0(0) Network services X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Terminal resource ID (BCUDID)*	5(5) Relative line number (in hex) of the line interface address** (CCBBAR)*		7(7) Recording mode X'84'	8(8) Record ID=X'25'
9(9) Level of information changes X'01'	10(A) Reserved		13(D) %	14(E) R	15(F) STX	16(10) Control unit address
17(11) Device address	18(12) 3270 Status/Sense					

Note: Offsets 13(D) through 19(13) contain the BSC 3270 status/sense message as it was received.

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for SNA Statistics

The line error recorder routine (CXDILER) and LPDA terminator (CXDKCET) build this RECMS RU.

RECMS PIU offset
55(37)

					0(0) Network service X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of the SDLC station	5(5) Relative line number (in hex) of the line interface address** (CCBBAR)*	7(7) Recording mode X'86'	8(8) Record ID=X'25'
9(9) Level of information changes X'02'	10(A) Reserved		13(D) Hex zeros		
17(11) 25(19)		27(1B) I-format transmission counter (SCBTCNT)*	29(1D) Reserved	31(1F) Total retry counter (SCBTRTCT)*	
33(21) Station type (SCBTYPE)*	Hex zeros				
41(29)			45(2D) Receive I-format error counter (SCBRECNT)*	47(2F) Total transmission counter (SCBTPCNT)*	

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for SNA Statistics (Cont.)

49(31) I-format received counter (error free) (SCBRCNT)*		51(33) S-format received counter (error free) (SCBRPCNT)*		53(35) Total ACK'd I-format counter (SCBTIACT)*		55(37) Total I-format retransmissions counter (SCBTINCT)*
57(39) Reserved		59(3B) NPDA alarm parameter	60(3C) Link subsystem type**	61(3D) LPDA control (1st byte)	62(3E) LPDA remote status***	64(40) LPDA local status (1st byte)***
65(41) LPDA local status (2nd byte)***	66(42) Reserved***					

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**Link subsystem type: X'00'—No link subsystem data.

X'01'—Link Problem Determination Aid (LPDA) test data.

***These fields are not present for a line without LPDA testing facilities or for which the LPDA test could not be initiated. The LPDA control byte is always present. If the remaining fields are not present, the control byte is marked "execution not attempted" for all tests.

Record Maintenance Statistic (RECMS) RU Format for Intensive-Mode Record for SNA Station Error

The intensive mode record processor (CXDKIM1) builds this RECMS RU.

RECMS PIU offset **55(37)**

								0(0) Network services X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of the SDLC station			5(5) **Relative line number (in hex) of the line interface address** (CCBBAR)***		7(7) Recording mode X'A3'	8(8) Record ID=X'25'
9(9) Level of information changes X'01'	Hex zeros				13(D) Service seeking control flags (SCBSSCF)*		15(F) Output control flag (SCBOCF)*	Hex zeros
17(11) I/O command (LXBCMAND)*	18(12) Command modifier field (LXBCMODS)*		20(14) Immed. ctrl command field (LXBIMCTL)*		21(15) Current error status (LXBSTAT)*		23(17) Extended error status (LXBEXTST)*	24(18) 1st error status (byte 1) (SCBERS)*
25(19) Hold SDLC status (byte 2) (SCBERS+1)*	26(1A) 1st error extended (SCBEERS)*	27(1B) Total I-format transmission counter (SCBTCNT)*			Hex zeros	30(1E) Received BLU command field (LXBRBLUC)*	31(1F) Total retry counter (SCBTRTCT)*	

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**See Section 19.

Record Maintenance Statistic (RECMS) RU Format for Intensive-Mode Record for SNA Station Error (Cont.)

33(21) Station type (SCBTYPE)*	34(22) ** Transmit BLU command (CCBCFLD)*	35(23) Current outstanding count (SCBCOC)*	36(24) Pass limit (SCBPCNT)*	37(25) Receive count (bits 4,5,6) (SCBNR)*	38(26) Send count (bits 4,5,6) (SCBNS)*	39(27) Control flags (CCBRSPON)*	40(28) Line type (CCBTYPE)*
41(29) Hex zeros				45(2D) Receive I-format error counter (SCBRECNT)*		47(2F) Total transmission counter (SCBTPCNT)*	
49(31) I-format received counter (error free) (SCBRCNT)*		51(33) S-format received counter (error free) (SCBRPCNT)*		53(35) Total ACK'd I-format counter (SCBTIACT)*		55(37) Total I-format retransmissions counter (SCBTINCT)*	
57(39) Intensive mode flags ***							

*Indicates the control block field from which this RECMS-RU field is loaded. (See "Data Area Layouts" section for field definitions.)

**This field contains the transmit BLU command for a duplex link; contains X'00' for a half-duplex link.

***Intensive mode flags

X'00' Normal intensive mode record (not the last IMR).

X'01' Last intensive mode record (when the IMR counter has reached the specified recording limit).

Record Maintenance Statistic (RECMS) RU Format for Pseudo Last-Intensive-Mode Record

The intensive mode terminator (CXDKIM2) builds this RECMS RU.

RECMS PIU offset

55(37)					0(0)
					Network services X'01'
1(1) Physical maint. service X'03'	2(2) Request code (RECMS) X'81'	3(3) Network address of the SDLC station (CUBRSE)*	5(5) Relative line number (in hex) of the line interface address*** (CCBBAR)*	7(7) Recording mode **	8(8) Record ID=X'25'
9(9) Level of information changes X'01'	Hex zeros		13(D)		
					56(38)

*Indicates the control block field from which this RECMS-RU field is loaded.

**Recording mode

X'A7' – Intensive mode stopped by a Set Control Vector (IM) command.

X'AB' – Intensive mode stopped by slowdown.

***See Section 19.

Section 18. Record Formatted Maintenance Service (RECFMS) Request/ Response Unit (RU) Formats

The network control program sends either an unsolicited request RECFMS PIU or a positive-reply RECFMS PIU to an REQMS (solicited request) to the access method to record:

- Alert message (18-2)
- Summary error data (18-4)
- Session trace data (request or reply):
  - Resource type = PU types 1 or 2 (18-5)
  - Resource type = NCP (PU type 4) (18-11)
  - Resource type = LU (18-13)
  - Resource type = Pre SNA (BSC or start stop) (18-16)
- Reply to an enable or inhibit session trace REQMS (18-22)
- EC change level data (18-23)
- Link problem determination aid (LPDA) data (18-25)

NCP RECFMS records are identified by RU bytes 1 and 2 in the FID1 PIU. For RECFMS records, RU byte 1 = X'03' and RU byte 2 = X'84'. Bytes 3 and 4 of the RU contain the resource identification and byte 5 is the beginning of the RECFMS record. RU byte 7 is the RECFMS type which is used to differentiate between the types of NCP RECFMS records.

Record Formatted Maintenance Statistics (RECFMS) RU Format for the Alert Message.

- NCP or PEP only.
- An unsolicited request.
- The MOSS down or offline module CXAMDNOF builds the MOSS-down alert RECFMS PIU and sends it to all owning SSCPs. (User action code X'01'.)
- All other alert RECFMS PIUs (user action codes other than X'01') are built by MOSS and sent to all owning SSCPs via NCP (CXAMPIUI).

RECFMS offset 55(37)						
						0(0) RU1BT0 Network Services X'41'
1(1) RU1BT1 Physical Maint services. X'03'	2(2) RU1RC2 Request Code (RECFMS). X'84'	3(3) RU1NA Alert originator PU network address.		5(5) RU1REMS X'1000' = bytes 3-4 contains a PU.T4 address.	7(7) RU1RMTYP RECFMS type. X'00'	8(8) RU1RFB1 Pland ID (PSBMIS1)*
9(9) RU1RFB2 (PSBMIS1)* RU1RFB3 RU1RFB4 Box serial number (PSBMIS2)*			12(C) Reserved		14(E) Alert format X'40'	15(F) ** Alert type, major probable cause.	16(10) ** Minor probable cause.
17(11) Reserved	18(12) ** User action code	19(13) Reserved	20(14) Vector length	21(15) UAQ ID	22(16)-n User Action Qualifier (first) UAQ message (first)		
n	n+1 Vector length	n+2 User Action Qualifier (last) UAQ ID	(n+3) -m UAQ message (last)				End of appended vectors. X'00'

*Indicates the control block field from which this RECFMS-RU field is loaded.

**See table on the following page for these values.

Alert Message Table for RECFMS Type 00

Offset	Description	18(12) User Action Code															
		01	02	03	04	05	06	07	08	09	0A	0B	0C	0D	0E	0F	10
15(F)	Alert type, major	11	21	11	11	11	41	11	12	11	12	11	11	12	12	11	12
16(10)	Minor cause	02	02	02	50	49	42	01	30	14	30	11	11	11	11	12	12

Values within the table are in hexadecimal.

Record Formatted Maintenance Statistics (RECFMS) RU Format for Summary Error Data

- MOSS requests buffers from NCP then builds and sends this RECFMS PIU via the NCP (CXAMPIUI) to the originator of the requesting REQMS type X'02.'

RECFMS offset 55(37)

					0(0) RU1BT0 Network Services X'41'
1(1) RU1BT1 Physical maint services. X'03'	2(2) RU1RC2 Request code. (RECFMS) X'84'	3(3) RU1NA 3725 PU network address.	5(5) RU1REMS X'1000' = Network address in RU1NA is PU.T4.	7(7) RU1RMTYP RECFMS Type 02. X'82'	8(8) RU1RFB1 Plant ID (PSAMIS1)*
9(9) RU1RFB2 (PSBMIS1)*	RU1RFB3 RU1RFB4 Box serial number (PSBMIS2)*	12(C) Reserved	14(E) ** Summary counter validity mask.	15(F) Reserved	
17(11) Machine check counter. Count of non-flagged BERs in the 3725 incident log file.	19(13) Communication check counter.	21(15) SNA negative responses at this PU			

*Indicates the control block field from which this RECFMS-RU field is loaded.

**Indicates a byte expansion follows.

Record Formatted Maintenance Statistics (RECFMS) RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'01' (PU Type 1) or X'02' (PU Type 2).

- An unsolicited request or a reply to an REQMS request type X'01' (trace data for a resource.)
- The session trace reporter (CXDKSTR) and CXDISTC build this RECFMS.

RECFMS offset 55(37)

0(0) RU1BT0 Network services. X'41'						
1(1) RU1BT1 Physical maint. services. X'03'	2(2) RU1RC2 Request code (RECFMS) X'84'	3(3) RU1NA Resource ID.	5(5) RU1REMS** RECFMS description. RU1REMS1	RU1REMS2	7(7) RU1RMTYP** RECFMS type.	8(8) RU1RFD2** RECFMS description 2. (first byte)
9(9) RU1RFD2** RECFMS description 2 (Cont.) (second, third, fourth bytes)		12(C) Reserved.	14(E) ST1KOPT Request type X'01' (Data)		15(F) ST1LVLID Level ID X'02' (Version 2)	16(10) ST1RETYP** Resource type ID.
17(11) Reserved.	18(12) ST2STRC (CUBSTRC)*	19(13) ST2OUTB1 (CXBOUTB1)*	21(15) ST2OUTB2 (CXBOUTB2)*		23(17) ST2INB1 (CXBINB1)*	
25(19) ST2INB2 (CXBINB2)*		27(1B) Reserved.	29(1D) ST2MCBD (CUBMCBD)*	ST21ECB (CUB1ECB)*		

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)
**Indicates a byte expansion follows.

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'01' (PU Type 1) or X'02' (PU Type 2) (Continued)

33(21) ST2LECB (CUBLECB)*			37(25) ST2STAT (CUBSTAT)*	38(26) ST2SCHED (CUBSCHED)*	39(27) ST2STSTP (CUBSTATP)*	40(28) ST2PREL (CUBPREL)*
41(29) ST2LOBH (CUBLOBH)*			45(2D) ST2LOBT (CUBLOBT)*			
49(31) ST2LOSH (CUBLOSH)*			53(35) ST2LOST (CUBLOST)*			
57(39) ST2ADRC (CUBADRC)*	58(3A) Reserved	59(3B) ST2SSCF (CUBSSCF)*	61(3D) ST2STATS (CUBSTATS)*	62(3E) ST2OCF (CUBOCF)*	63(3F) ST2TCNT (CUBTCNT)*	
65(41) ST2APIU (CUBAPIU)*			69(45) ST2NR (CUBNR)*	70(46) ST2NS (CUBNS)*	71(47) ST2ERS (CUBERS)*	

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'01' (PU Type 1) or X'02' (PU Type 2) (Continued)

73(49) ST2OCL (CUBOCL)*		75(4B) ST2RCMD (CUBRCMD)*	76(4C) ST2TERR (CUBTERR)*	77(4D) ST2TRTCT (CUBTRTCT)*		79(4F) ST2RECNT (CUBRECNT)*	
81(51) ST2TPCNT (CUBTPCNT)*		83(53) ST2IMRC (CUBIMRC)*		85(55) ST2RCNT (CUBRCNT)*		87(57) ST2RPCNT (CUBRPCNT)*	
89(59) ST31ECB (LKW1ECB)*				93(5D) ST3LECB (LKWLECB)*			
97(61) ST3SKEP (LKWTSKEP)*				101(65) ST3SCHED (LKWSCHED)*	102(66) Reserved	103(67) ST3NWADR (LKBNWADR)*	
105(69) ST3KSTAT (LKBSTAT)*	106(6A) ST3TYPE (LKBTYPE)*	107(6B) ST3SNPM (LKBSNPM)*	108(6C) ST3SWST (LKBSWST)*	109(6D) ST3DRST (LKBDRST)*	110(6E) ST3LPDA (LKBLPDA)*	111(6F) ST3ALARM (LKBALARM)*	112(70) ST3SST (LKBSST)*

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'01' (PU Type 1) or X'02' (PU Type 2) (Continued)

113(71) ST3TCTL (AXBTCTL)*	114(72) ST3CMD1 (AXBCMD1)*	115(73) ST3CMD2 (AXBCMD2)*	116(74) (ST3CMD3 (AXBCMD3)*	117(75) ST3STAT1 (AXBSTAT1)*		119(77) ST3STAT2 (AXBSTAT2)*	
121(79) ST3STAT3 (AXBSTAT3)*		123(7B) ST3IMCTL (LXBIMCTL)*	124(7C) ST3CMAND (LXBCMAND)*	125(7D) ST3CMODS (LXBCMODS)*		127(7F) ST3XSTAT (LXBSTAT)*	
129(81) ST3ERST (LXBERST)*	130(82) ST3HSTAT (LXBHSTAT)*	131(83) ST3EREST (LXBEREST)*	132(84) ST3RTYCT (LXBRTYCT)*	133(85) ST3BKSIZ (LXBBKSIZ)*		135(87) ST3EXTST (LXBEXTST)*	136(88) Reserved
137(89) ST3L2 (CCBL2)* Note 1		139(8B) ST3STATE (CCBSTATE)* Note 1		141(8D) ST3TIME (CCBTIME)* Note 1		143(8F) ST3BAR (CCBBAR)* Note 1	
145(91) ST3BCC (CCBBCC)* Note 1		147(93) ST3CNTS (CCBCNTS)* Note 1		149(95) ST3BSTA1 (CCBSTAT1)* Note 1		151(97) ST3END1 (CCBEND1)* Note 1	

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Note 1: *Contains data for half-duplex lines. For duplex lines, the data is for the receive leg.*

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'01' (PU Type 1) or X'02' (PU Type 2) (Continued)

153(99) ST3DATA (CCBDATA)* Note 1			157(9D) ST3START (CCBSTART)* Note 1			
161(A1) ST4HDBUF (CCBHDBUF)* Note 1			165(A5) ST4L3 (CCBL3)* Note 1		167(A7) ST4STAT2 (CCBSTAT2)* Note 1	168(A8) ST4ERCNT (CCBERCNT)* Note 1
169(A9) ST4CTL (CCBCTL)* Note 1	171(AB) ST4ESTAT (CCBESTAT)* Note 1		173(AD) ST4CRTN (CCBCRTN)* Note 1	174(AE) ST4LCNT (CCBLCNT)* Note 1	175(AF) ST4LCTRP (CCBLCTRP)* Note 1	176(B0) Reserved
177(B1) ST4LATO (CCBLATO)* Note 1	179(B3) ST4NCFL (CCBNCFL)* Note 1	180(B4) ST4OFSET (CCBOFSET)* Note 1	181(B5) ST4POLL (CCBPOLL)* Note 1			
185(B9) ST4SEL (CCBSEL)* Note 1			189(BD) ST4L2 (CCBL2) Note 2		191(BF) ST4TIME (CCBTIME) Note 2)	

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Notes:

1. *Contains data for half-duplex lines. For duplex lines, the data is for the receive leg.*
2. *Contains zeros for half-duplex lines. For duplex lines, the data is for the transmit leg.*

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'01' (PU Type 1) or X'02' (PU Type 2) (Continued)

193(C1) ST4BAR (CCBBAR)* Note 2		195(C3) ST4BCC (CCBBCC)* Note 2		197(C5) ST4STAT1 (CCBSTAT1)* Note 2		199(C7) ST4END1 (CCBEND1)* Note 2	
201(C9) ST4XDATA (CCBDATA – transmit)				205(CD) ST4XSTAR (CCBSTART – transmit)			
209(D1) ST4XL3 (CCBL3)* Note 2		211(D3) ST4XESTA (CCBESTAT)* Note 2		213(D5) ST4XCTL (CCBCTL)* Note 2		215(D7) ST4XCRTN (CCBCRTN)* Note 2	216(D8) ST4XLCNT (CCBLCNT)* Note 2
217(D9) ST4XSEL (CCBSEL)* Note 2)				221(DD) ST4PPCMD (PSAPCMOD)	222(DE) ST4PPSCF (PSAPSCF)	223(DF) ST4PPDF (PSAPDF)	224(E0) ST4PPCPC (PSAPCPC)
225(E1) ST4PXMIT (PSAXMITC)	226(E2) ST4PSSCF (PSASSCF)	227(E3) ST4PCMD (PSACMD)	228(E4) ST4PSES (PSASES)	229(E5) ST4PLSTA (PSALSTAT)	230(E6) ST4PSLCP (PSASLCPC)	231(E7) ST4PINLD (PSAINLD)	232(E8) ST4PCPS1 (PSASCPS1)
233(E9) ST4PCPS2 (PSASCPS2)							

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Note 2: Contains zeros for half-duplex lines. For duplex lines, the data is for the transmit leg.

Record Formatted Maintenance Statistics (RECFMS) RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'03' (PU Type 4 — NCP)

- An unsolicited request or a reply to an REQMS request type X'01' (trace data for a resource.)
- The session trace reporter (CXDKSTR) builds this RECFMS.

RECFMS offset 55(37)

						0(0) RU1BT0 Network services. X'41'
1(1) RU1BT1 Physical maint. services. X'03'	2(2) RU1RC2 Request code (RECFMS) X'84'	3(3) RU1NA Resource ID.	5(5) RU1REMS** RECFMS description. RU1REMS1 / RU1REMS2		7(7) RU1RMTYP** RECFMS type.	8(8) RU1RFD2** RECFMS description 2. (first byte)
9(9) RU1RFD2** RECFMS description 2 (Cont.) (second, third, fourth bytes)			12(C) Reserved.		14(E) ST1KOPT Request type X'01' (Data)	15(F) ST1LVLID Level ID X'02' (Version 2)	16(10) ST1RETYP** Resource type ID.
17(11) ST81ECB (PSB1ECB)*			21(15) ST8LECB (PSBLECB)*			
25(19) ST8STAT (PSBSTAT)*	26(1A) ST8SCHED (PSBSCHED)*	27(1B) ST8ADRPS (PSBADRPS)*	29(1D) ST8SSNPM (PSBSSNPM)*	30(1E) ST8PSTAT (PSBPSTAT)*	31(1F) ST8LDID (PSBLDID)*	

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

**Indicates a byte expansion follows.

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'03' (PU Type 4-NCP) (Continued)

33(21) ST8LDID (Continued) (PSBLDID)*				39(27) ST8LVID (PSBLVID)*	
41(29) ST8LVID (Continued) (PSBLVID)*				47(2F) ST8CRBP (PSBCRBP)*	
49(31) ST8CRBP (Cont.) (PSBCRBP)*	51(33) ST8ADRPC (SNPADRPC)* Note	53(35) ST8PPSTA (SNPPSTAT)*	54(36) ST8SSTAT (SNPSSTAT)*	55(37) ST8SNPM (SNPSNPM)*	56(38) ST8SNSC (SNPANSC)*
57(39) ST8SEQI (SNPSEQI)*	59(3B) ST8SEQO (SNPSEQO)*	61(3D) ST8STFLG (SNPSTFLG)*	62(3E) Reserved		

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Note: *The SNP data is for the SSCP-to-NCP session on which the session-trace REQMS was received.*

Record Formatted Maintenance Statistics (RECFMS) RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'04' (LU)

- An unsolicited request or a reply to an REQMS request type X'01' (trace data for a resource.)
- The session trace reporter (CXDKSTR) builds this RECFMS.

RECFMS offset 55(37)						
						0(0) RU1BT0 Network services. X'41'
1(1) RU1BT1 Physical maint. services. X'03'	2(2) RU1RC2 Request code (RECFMS) X'84'	3(3) RU1NA Resource ID.		5(5) RU1REMS** RECFMS description. RU1REMS1	RU1REMS2	7(7) RU1RMTYP** RECFMS type.	8(8) RU1RFD2** RECFMS description 2. (first byte)
9(9) RU1RFD2** RECFMS description 2 (Cont.) (second, third, fourth bytes)			12(C) Reserved.		14(E) ST1KOPT Request type X'01' (Data)	15(F) ST1LVLID Level ID X'02' (Version 2)	16(10) ST1RETYP** Resource type ID.
17(11) Reserved	18(12) ST6STRC (LUBSTRC)*	19(13) ST6OUTB1 (LUBOUTB1)*		21(15) ST6OUTB2 (LUBOUTB2)*		23(17) ST6INB1 (LUBINB1)*	
25(19) ST6INB2 (LUBINB2)*		27(1B) Reserved		29(1D) ST6L1ECB (LUL1ECB)*			

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)
**Indicates a byte expansion follows.

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'04' (LU) (Continued)

33(21) ST6LLECB (LULLECB)*				37(25) ST6LSTAT (LULSTAT)*	38(26) ST6LCHED (LULSCHED)*	39(27) ST6LTATP (LULSTATP)*	40(28) ST6LPREL (LULPREL)*
41(29) ST6NETAD (LULNETAD)*		43(2B) Reserved		45(2D) ST6A1ECB (LUA1ECB)*			
49(31) ST6ALECB (LUALECB)*				53(35) ST6ASTAT (LUASTAT)*	54(36) ST6ACHED (LUASCHED)*	55(37) ST6ATATP (LUASTATP)*	56(38) ST6APREL (LUAPREL)*
57(39) ST6SPART (LUASPART)*		59(3B) ST6CSTAT (LUBCSTAT)*	60(3C) ST6CPSET (LUBCPSET)*	61(3D) ST6CSSET (LUBCSSET)*	62(3E) ST6APSET (LUBAPSET)*	63(3F) ST6ASSET (LUBASSET)*	64(40) ST6M (LUBM)*
65(41) ST6N (LUBN)*	66(42) ST6MG (LUBMG)*	67(43) ST6NG (LUBNG)*	68(44) ST6PC (LUBPC)*	69(45) ST6LALU (LUBLALU)*	70(46) ST6PS (LUBPS)*	71(47) ST6UNBTP (LUBUNBTP)*	72(48) ST6PRADR (LUBPRADR)* (byte X)

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'04' (LU) (Continued)

73(49) ST6PRADR (Cont.) (LUBPRADR)* (byte 0, byte 1) Note	75(4B) ST6AOSLU (LUBAOSLU)* Note	77(4D) ST6SOSLU (LUBSOSLU)* Note	79(4F) ST6AOLLU (LUBAOLLU)* Note
81(51) ST6SILLU (LUBSILLU)* Note	83(53) ST6SOLLU (LUBSOLLC)* Note	85(55) ST6SOLLS (LUBSOLLS)* Note	87(57) ST6IDGN (LUBIDGN)* Note

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Note: *These fields are set to zero for non-PU-Type 1 LUs.*

Record Formatted Maintenance Statistics (RECFMS) RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'05' Pre-SNA (BSC/Start Stop)

- An unsolicited request or a reply to an REQMS request type X'01' (trace data for a resource.)
- The session trace reporter (CXDKSTR) and CXDISTC build this RECFMS.

RECFMS offset 55(37)

							0(0) RU1BT0 Network services. X'41'
1(1) RU1BT1 Physical maint. services. X'03'	2(2) RU1RC2 Request code (RECFMS) X'84'	3(3) RU1NA Resource ID.		5(5) RU1REMS** RECFMS description. RU1REMS1	RU1REMS2	7(7) RU1RMTYP** RECFMS type.	8(8) RU1RFD2** RECFMS description 2. (first byte)
9(9) RU1RFD2** RECFMS description 2 (Cont.) (second, third, fourth bytes)			12(C) Reserved.		14(E) ST1KOPT Request type X'01' (Data)	15(F) ST1LVLID Level ID X'02' (Version 2)	16(10) ST1RETYP** Resource type ID.
17(11) Reserved	18(12) ST9OUTB1 (DVBOUTB1)*	19(13) ST9OUTB2 (DVBOUTB2)*	20(14) ST9OUTB3 (DVBOUTB3)*	21(15) ST9INB1 (DVBINB1)*	22(16) ST9STAT (DVISTAT)*	23(17) ST9RID (DVBRID)*	
25(19) ST9Q1ECB (DVQ1ECB)*				29(1D) ST9QLECB (DVQLECB)*			

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)
**Indicates a byte expansion follows.

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'05' Pre-SNA (BSC/SS) (Continued)

33(21) ST9I1ECB (DVI1ECB)*				37(25) ST9ILECB (DVILECB)*		
41(29) ST9SCHED (DVISCHED)*	42(24) ST9FEAT1 (DVBFEAT1)*	43(2B) ST9FEAT2 (DVBFEAT2)*	44(2C) ST9TYPE (DVBTYPE)*	45(2D) ST9SDRT (DVBSDRT)*		
49(31) ST9ABNM (DVBABNM)*	50(32) ST9SDRE (DVBSDRE)*	51(33) ST9SESSC (DVBSESSC)*	52(34) ST9SRTR (DVBSRTR)*	53(35) ST9OLDSP (DVBOLDSP)*		55(37) ST9SRTT (DVBSRTT)*
57(39) ST9BSTAT (DVBSTAT)*	58(3A) ST9STAT2 (DVBSTAT2)*	59(3B) ST9DMF (DVBDMF)*		61(3D) ST9PCC (DVBPCC)*	62(3E) ST9STAT3 (DVBSTAT3)*	63(3F) ST9SP (DVBSP)
65(41) ST9TLIM (DVBTLIM)* Note	66(42) ST9TCNT (DVBTCNT)* Note	67(43) ST9ISTAT (LCISTAT)*	68(44) ST9WSTAT (LCWSTAT)*	69(45) ST9CI1EC (LCI1ECB)*		

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Note: These fields are zero if the Polling/Addressing extension does not exist.

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'05' Pre-SNA (BSC/SS) (Continued)

73(49) ST9CILEC (LCILECB)*				77(4D) ST9BHSET (LCIBHSET)*		
81(51) ST9W1ECB (LCW1ECB)*				85(55) ST9WLECB (LCWLECB)*		
89(59) STALTCTP (LCBLTCTP)*				93(5D) STADVBP (LCBDVBP)*		
STALSTAT (LCBLSTAT)*						
97(61) STAMFLAG (LCBMFLAG)*	98(62) STASNPM (LCBSNPM)*	99(63) STASST (LCBSST)*	100(64) STAALARM (LCBALARM)*	101(65) STASSP (LCBSSP)*	103(67) STAFEAT1 (LCBFEAT1)*	104(68) STALST2 (LCBLST2)*
105(69) STAACTNS (LCBACTNS)*	106(6A) STAERPC (LCBERPC)*	107(6B) STACOFFC (LCBCOFFC)*	108(6C) STAIOCOM (LCBIOCOM)*	109(6D) STACSCNT (LCBCSCNT)*	111(6F) STARID (LCBRID)*	

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'05' Pre-SNA (BSC/SS) (Continued)

113(71) STAENAKL (LCBENAKL)* Note	114(72) STAESERL (LCBESERL)* Note	115(73) STAMS (LCBMS)* Note	116(74) STAAS (LCBAS)* Note	117(75) STACS (LCBCS)* Note	118(76) STAWS (LCBWS)* Note	119(77) STAENOD (LCBENOD)* Note	120(78) STAEDIG (LCBEDIG)* Note
121(79) STASOTCT (LCBSOTCT)* Note	122(7A) Reserved			125(7D) STATCTL (AXBTCTL)*	126(7E) STACMD1 (AXBCMD1)*	127(7F) STACMD2 (AXBCMD2)*	128(80) STACMD3 (AXBCMD3)*
129(81) STASTAT1 (AXBSTAT1)*		131(83) STASTAT2 (AXBSTAT2)*		133(85) STASTAT3 (AXBSTAT3)*		135(87) STAIMCTL (IOBIMCTL)*	136(88) STACMAND (IOBCMAND)*
137(89) STACMODS (IOBCMODS)*		139(8B) STASTAT (IOBSTAT)*		141(8D) STAERST (IOBERST)*		143(8F) STAEREST (IOBEREST)*	144(90) STARTYCT (IOBRTYCT)*
145(91) STABKSIZ (IOBBKSIZ)*		147(93) STAEXTST (IOBEXTST)*	148(94) Reserved	149(95) STAL2 (CCBL2)*		151(97) STASTATE (CCBSTATE)*	

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Note: *These fields are zero if the Multipoint extension does not exist.*

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'05' Pre-SNA (BSC/SS) (Continued)

153(99) STATIME (CCBTIME)*			155(9B) STABAR (CCBBAR)*		157(9D) STABCC (CCBBCC)*		159(9F) STACNTS (CCBCNTS)*
161(A1) STBSTAT1 (CCBSTAT1)*			163(A3) STBEND1 (CCBEND1)*		165(A5) STBDATA (CCBDATA)*		
169(A9) STBSTART (CCBSTART)*					173(AD) STBHDBUF (CCBHDBUF)*		
177(B1) STBL3 (CCBL3)*			179(B3) STBSTAT2 (CCBSTAT2)*	180(B4) STBERCNT (CCBERCNT)*	181(B5) STBCTL (CCBCTL)*		183(B7) STBESTAT (CCBESTAT)
185(B9) STBCRTN (CCBCRTN)*	186(BA) STBLCNT (CCBLCNT)*		187(BB) STBLCTRP (CCBLCTRP)*	188(BC) Reserved	189(BD) STBLATO (CCBLATO)*		191(BF) STBNCFL (CCBNCFL)*	192(C0) STBOFSET (CCBOFSET)*

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

RECFMS RU Format for Session Trace Data: Resource Type (ST1RETYP) = X'05' Pre-SNA (BSC/SS) (Continued)

193(C1) STBPOLL (CCBPOLL)*				197(C5) STBSEL (CCBSEL)*			
201(C9) STBPPCMD (PSAPCMOD)*	202(CA) STBPPSCF (PSAPSCF)*	203(CB) STBPPDF (PSAPDF)*	204(CC) STBPPCPC (PSAPCPC)*	205(CD) STBPXMIT (PSAXMITC)*	206(CE) STBPSSCF (PSASSCF)*	207(CF) STBPCMD (PSACMD)*	208(D0) STBPSES (PSASES)*
209(D1) STBPLSTA (PSALSTAT)*	210(D2) STBPSLCP (PSASLCPC)*	211(D3) STBPINLD (PSAINLD)*	212(D4) STBPCPS1 (PSASCPS1)*	213(D5) STBPCPS2 (PSASCPS2)*			

*Indicates the control block field from which this RECFMS-RU field is loaded. (See Section 2 "Data Area Layouts" for field definitions.)

Record Formatted Maintenance Statistics (RECFMS) RU Format for Enable Session Trace or Inhibit Session Trace Request Type

- A reply to REQMS request types X'02', X'03', X'04', or X'05'.
- Built by the session trace reporter (CXDKSTR.)

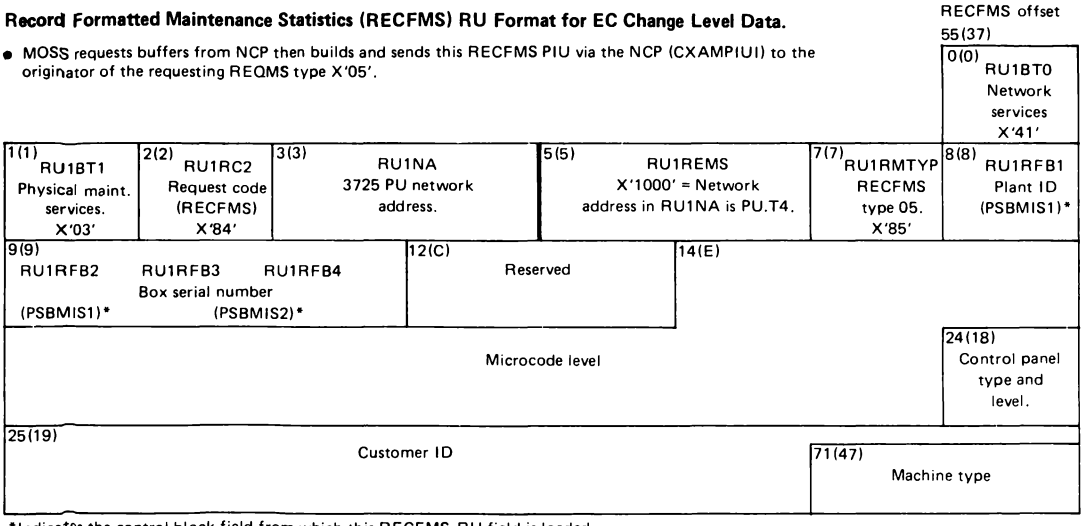
RECFMS offset 55(37)

0(0) RU1BT0 Network services. X'41'						
1(1) RU1BT1 Physical maint. services. X'03'	2(2) RU1RC2 Request code (RECFMS) X'84'	3(3) RU1NA Resource ID.	5(5) RU1REMS** RECFMS description. RU1REMS1	RU1REMS2	7(7) RU1RMTYP** RECFMS type.	8(8) RU1RFD2** RECFMS description 2. (first byte)
9(9) RU1RFD2** RECFMS description 2 (Cont.) (second, third, fourth bytes)		12(C) Reserved.		14(E) ST1KOPT** Request type.	15(F) ST1LVLID Level ID X'02' (Version 2)	16(10) ST1RETYP** Resource type ID.

**Indicates a byte expansion follows.

Record Formatted Maintenance Statistics (RECFMS) RU Format for EC Change Level Data.

- MOSS requests buffers from NCP then builds and sends this RECFMS PIU via the NCP (CXAMPIUI) to the originator of the requesting REQMS type X'05'.



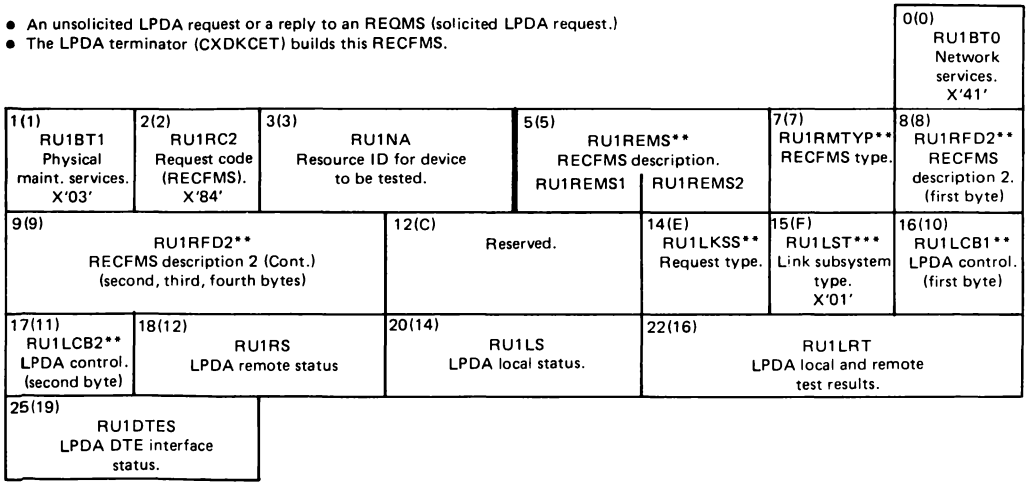
*Indicates the control block field from which this RECFMS-RU field is loaded.

RECFMS RU Format for EC Change Level Data

73(49) Machine type. (Cont.)	75(4B) Model ID	77(4D) Machine serial number
81(51) Machine serial number (Cont.)		85(55) – 244(154)
ZAP historical data 16 entry table. Each entry contains the ZAP ID (the last 7 characters) and the application date (3 characters).		

Record Formatted Maintenance Statistics (RECFMS) RU Format for Link Problem Determination Aid (LPDA)

- An unsolicited LPDA request or a reply to an REQMS (solicited LPDA request.)
- The LPDA terminator (CXDKCET) builds this RECFMS.



**Indicates a byte expansion follows.

***Link subsystem type: X'01' – Link Problem Determination Aid (LPDA) test data.

Byte Expansion for All RECFMS Types

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
5(5) RU1REMS	Byte 0	RECFMS description.
	xx..	Reserved.
	..xx	Resource ID description.
	 xxxx	Procedure related identifier.
	Byte 1 xxxx xxxx	Procedure related identifier.
	X'1000'	Network address in RU1NA is a PU type 4.
7(7) RU1RMTYP		RECFMS type.
	x...	1 = Solicited request. 0 = Unsolicited request.
	.1..	Not last request indicator.
	..00 0000	Alert message.
	..00 0010	Summary error data.
	..00 0100	Session trace.
	..00 0101	EC change level data.
	..00 0110	Link Problem Determination Aid (LPDA) type code.
8(8) RU1RFD2		RECFMS description 2.
	1st byte xxxx xxxx 2nd byte xxxx	Block number.
	 xxxx	Block number.
	3rd byte xxxx xxxx 4th byte xxxx xxxx	ID number associated with sending PU.
14(E) RU1LKSS		LPDA request type.
	X'02'	Request link status.
	X'03'	Request remote DTE interface status.
ST1KOPT		Session trace request type.
	X'01'	Report-data request.
	X'02'	Enable Trace request for a specific resource.
	X'03'	Inhibit Trace request for a specific resource.
	X'04'	Enable Trace request for all resources.
	X'05'	Inhibit Trace request for all resources.

Byte Expansions for All RECFMS Types (Continued)

Offset/ Field Name	Bit Pattern/ Hex Value	Contents
14(E) (Cont.)		Summary counter validity mask.
	1...	Machine check counter
	.1..	Communication check counter.
	..1.	SNA error counter. (Bits 3 through 7 reserved.)
16(10) RU1LCB1		LPDA control (validity indicators of test results).
	1st byte	
	xx..	Remote modem status.
	..xx	Local modem status.
	.... xx..	Local and remote modem self test.
	xx	Reserved.
RU1LCB2	2nd byte	
	xx..	Remote DTE interface status where: 00 = Data valid 01 = Data invalid — no response. 10 = Data invalid — bad response. 11 = Data invalid — execution not attempted.
	..xx xxxx	Reserved.
ST1RETYP		Session trace resource type ID.
	X'01'	PU type 1.
	X'02'	PU type 2.
	X'03'	PU type 4 (NCP).
	X'04'	LU.
	X'05'	Non-SNA (BSC/SS).

Section 19. Interface Addressing

LAB	A	B	C
1	0	0	0
2	0	0	1
3*	0	1	0
4*	0	1	1
5*	1	0	0
6*	1	0	1
7*	1	1	0
8*	1	1	1

*Optionally may contain one scanner (32 lines) or two scanners each containing 16 lines.

CSP	A	B	C	D	
1	0	0	0	0	First 16 lines on CSP1
	0	0	0	1	Second 16 lines on CSP1
3	0	0	1	0	First 16 lines on CSP3
	0	0	1	1	Second 16 lines on CSP3
5	0	1	0	0	
6	0	1	0	1	
7	0	1	1	0	
8	0	1	1	1	
9	1	0	0	0	
10	1	0	0	1	
11	1	0	1	0	
12	1	0	1	1	
13	1	1	0	0	
14	1	1	0	1	
15	1	1	1	0	
16	1	1	1	1	

Communications Scanner Processor Interface Address Bits

		Interface Address Assignments (Hex)															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		LNVT Entries (CCBBAR) (Hex)															
		Relative Line Number Dec (Hex)															
LAB 1	00 –	880 884		888 88C		890 894		898 89C		8A0 8A4		8A8 8AC		8B0 8B4		8B8 8BC	
		0(0)		1(1)		2(2)		3(3)		4(4)		5(5)		6(6)		7(7)	
	01 –	8C0 8C4		8C8 8CC		8D0 8D4		8D8 8DC		8E0 8E4		8E8 8EC		8F0 8F4		8F8 8FC	
		8(8)		9(9)		10(A)		11(B)		12(C)		13(D)		14(E)		15(F)	
	02 –	900 904		908 90C		910 914		918 91C		920 924		928 92C		930 934		938 93C	
		16(10)		17(11)		18(12)		19(13)		20(14)		21(15)		22(16)		23(17)	
	03 –	940 944		948 94C		950 954		958 95C		960 964		968 96C		970 974		978 97C	
		24(18)		25(19)		26(1A)		27(1B)		28(1C)		29(1D)		30(1E)		31(1F)	
LAB 2	04 –	980 984		988 98C		990 994		998 99C		9A0 9A4		9A8 9AC		9B0 9B4		9B8 9BC	
		32(20)		33(21)		34(22)		35(23)		36(24)		37(25)		38(26)		39(27)	
	05 –	9C0 9C4		9C8 9CC		9D0 9D4		9D8 9DC		9E0 9E4		9E8 9EC		9F0 9F4		9F8 9FC	
		40(28)		41(29)		42(2A)		43(2B)		44(2C)		45(2D)		46(2E)		47(2F)	

Note: *The LNVT entries shown in these tables are for the default starting address of X'880'. This starting address may be changed by the Set Line Vector Table High/Low operation codes.*

Interface Address Relations to Relative Line Number, LNVT Entries, and LAB Positions (Part 1 of 6)

		Interface Address Assignments (Hex)															
		→ 0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		LNVT Entries (CCBBAR) (Hex) Relative Line Number Dec (Hex)															
LAB2 (Cont.)	06 –	A00 A04 48(30)		A08 A0C 49(31)		A10 A14 50(32)		A18 A1C 51(33)		A20 A24 52(34)		A28 A2C 53(35)		A30 A34 54(36)		A38 A3C 55(37)	
	07 –	A40 A44 56(38)		A48 A4C 57(39)		A50 A54 58(3A)		A58 A5C 59(3B)		A60 A64 60(3C)		A68 A6C 61(3D)		A70 A74 62(3E)		A78 A7C 63(3F)	
LAB 3	08 –	A80 A84 64(40)		A88 A8C 65(41)		A90 A94 66(42)		A98 A9C 67(43)		AA0 AA4 68(44)		AA8 AAC 69(45)		AB0 AB4 70(46)		AB8 ABC 71(47)	
	09 –	AC0 AC4 72(48)		AC8 ACC 73(49)		AD0 AD4 74(4A)		AD8 ADC 75(4B)		AE0 AE4 76(4C)		AE8 AEC 77(4D)		AF0 AF4 78(4E)		AF8 AFC 79(4F)	
	0A –	B00 B04 80(50)		B08 B0C 81(51)		B10 B14 82(52)		B18 B1C 83(53)		B20 B24 84(54)		B28 B2C 85(55)		B30 B34 86(56)		B38 B3C 87(57)	
	0B –	B40 B44 88(58)		B48 B4C 89(59)		B50 B54 90(5A)		B58 B5C 91(5B)		B60 B64 92(5C)		B68 B6C 93(5D)		B70 B74 94(5E)		B78 B7C 95(5F)	

Interface Address Relations to Relative Line Number, LNVT Entries, and LAB Positions (Part 2 of 6)

	Interface Address Assignments (Hex) →	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		LNVT Entries (CCBBAR) (Hex) / Relative Line Number Dec (Hex)															
LAB 4	0C –	B80 B84 / 96(60)	B88 B8C / 97(61)	B90 B94 / 98(62)	B98 B9C / 99(63)	BA0 BA4 / 100(64)	BA8 BAC / 101(65)	BB0 BB4 / 102(66)	BB8 BBC / 103(67)								
	0D –	BC0 BC4 / 104(68)	BC8 BCC / 105(69)	BD0 BD4 / 106(6A)	BD8 BDC / 107(6B)	BE0 BE4 / 108(6C)	BE8 BEC / 109(6D)	BF0 BF4 / 110(6E)	BF8 BFC / 111(6F)								
	0E –	C00 C04 / 112(70)	C08 C0C / 113(71)	C10 C14 / 114(72)	C18 C1C / 115(73)	C20 C24 / 116(74)	C28 C2C / 117(75)	C30 C34 / 118(76)	C38 C3C / 119(77)								
	0F –	C40 C44 / 120(78)	C48 C4C / 121(79)	C50 C54 / 122(7A)	C58 C5C / 123(7B)	C60 C64 / 124(7C)	C68 C6C / 125(7D)	C70 C74 / 126(7E)	C78 C7C / 127(7F)								
LAB 5	10 –	C80 C84 / 128(80)	C88 C8C / 129(81)	C90 C94 / 130(82)	C98 C9C / 131(83)	CA0 CA4 / 132(84)	CA8 CAC / 133(85)	CB0 CB4 / 134(86)	CB8 CBC / 135(87)								
	11 –	CC0 CC4 / 136(88)	CC8 CCC / 137(89)	CD0 CD4 / 138(8A)	CD8 CDC / 139(8B)	CE0 CE4 / 140(8C)	CE8 CEC / 141(8D)	CF0 CF4 / 142(8E)	CF8 CFC / 143(8F)								

Interface Address Relations to Relative Line Number, LNVT Entries, and LAB Positions (Part 3 of 6)

		Interface Address Assignments (Hex)															
		0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		LNVT Entries (CCBBAR) (Hex) Relative Line Number Dec (Hex)															
LAB 5 (Cont.)	12 –	D00 D04 144(90)		D08 D0C 145(91)		D10 D14 146(92)		D18 D1C 147(93)		D20 D24 148(94)		D28 D2C 149(95)		D30 D34 150(96)		D38 D3C 151(97)	
	13 –	D40 D44 152(98)		D48 D4C 153(99)		D50 D54 154(9A)		D58 D5C 155(9B)		D60 D64 156(9C)		D68 D6C 157(9D)		D70 D74 158(9E)		D78 D7C 159(9F)	
LAB 6	14 –	D80 D84 160(A0)		D88 D8C 161(A1)		D90 D94 162(A2)		D98 D9C 163(A3)		DA0 DA4 164(A4)		DA8 DAC 165(A5)		DB0 DB4 166(A6)		DB8 DBC 167(A7)	
	15 –	DC0 DC4 168(A8)		DC8 DCC 169(A9)		DD0 DD4 170(AA)		DD8 DDC 171(AB)		DE0 DE4 172(AC)		DE8 DEC 173(AD)		DF0 DF4 174(AE)		DF8 DFC 175(AF)	
	16 –	E00 E04 176(B0)		E08 E0C 177(B1)		E10 E14 178(B2)		E18 E1C 179(B3)		E20 E24 180(B4)		E28 E2C 181(B5)		E30 E34 182(B6)		E38 E3C 183(B7)	
	17 –	E40 E44 184(B8)		E48 E4C 185(B9)		E50 E54 186(BA)		E58 E5C 187(BB)		E60 E64 188(BC)		E68 E6C 189(BD)		E70 E74 190(BE)		E78 E7C 191(BF)	

Interface Address Relations to Relative Line Number, LNVT Entries, and LAB Positions (Part 4 of 6)

		Interface Address Assignments (Hex) → 0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		LNVT Entries (CCBBAR) (Hex) / Relative Line Number Dec (Hex)															
LAB 7	18 –	E80 E84 192(C0)	E88 E8C 193(C1)	E90 E94 194(C2)	E98 E9C 195(C3)	EA0 EA4 196(C4)	EA8 EAC 197(C5)	EB0 EB4 198(C6)	EB8 EBC 199(C7)								
	19 –	EC0 EC4 200(C8)	EC8 ECC 201(C9)	ED0 ED4 202(CA)	ED8 EDC 203(CB)	EE0 EE4 204(CC)	EE8 EEC 205(CD)	EF0 EF4 206(CE)	EF8 EFC 207(CF)								
	1A –	F00 F04 208(D0)	F08 F0C 209(D1)	F10 F14 210(D2)	F18 F1C 211(D3)	F20 F24 212(D4)	F28 F2C 213(D5)	F30 F34 214(D6)	F38 F3C 215(D7)								
	1B –	F40 F44 216(D8)	F48 F4C 217(D9)	F50 F54 218(DA)	F58 F5C 219(DB)	F60 F64 220(DC)	F68 F6C 221(DD)	F70 F74 222(DE)	F78 F7C 223(DF)								
LAB 8	1C –	F80 F84 224 (E0)	F88 F8C 225(E1)	F90 F94 226(E2)	F98 F9C 227(E3)	FA0 FA4 228(E4)	FA8 FAC 229(E5)	FB0 FB4 230(E6)	FB8 FBC 231(E7)								
	1D –	FC0 FC4 232(E8)	FC8 FCC 233(E9)	FD0 FD4 234(EA)	FD8 FDC 235(EB)	FE0 FE4 236(EC)	FE8 FEC 237(ED)	FF0 FF4 238(EE)	FF8 FFC 239(EF)								

Interface Address Relations to Relative Line Number, LNVT Entries, and LAB Positions (Part 5 of 6)

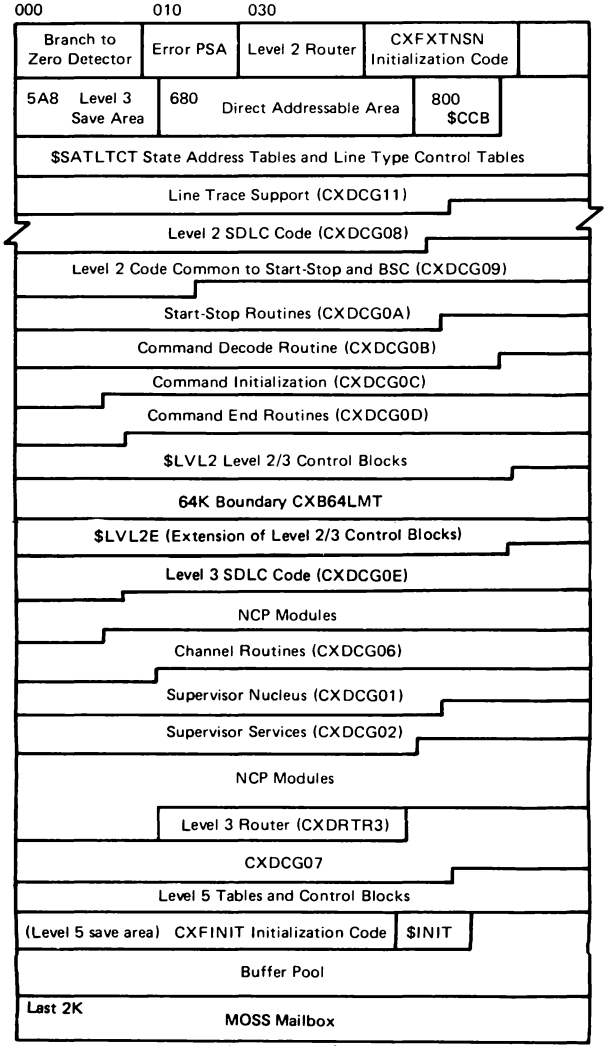
		Interface Address Assignments (Hex)														
		→ 0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
		LNVT Entries (CCBBAR) (Hex) Relative Line Number Dec (Hex)														
LAB 8 (Cont.)	1E –	1000 1004 240(F0)		1008 100C 241(F1)		1010 1014 242(F2)		1018 101C 243(F3)		1020 1024 244(F4)		1028 102C 245(F5)		1030 1034 246(F6)		1038 103C 247(F7)	
	1F –	1040 1044 248(F8)		1048 104C 249(F9)		1050 1054 250(FA)		1058 105C 251(FB)		1060 1064 252(FC)		1068 106C 253(FD)		1070 1074 254(FE)		1078 107C 255(FF)	

Interface Address Relations to Relative Line Number, LNVT Entries, and LAB Positions (Part 6 of 6)

Section 20. EP Storage Map

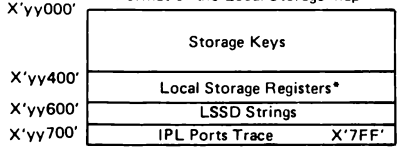
Address (hex)	Description
000-67F	CYKNUC module (except when destroyed by dump)
680	Byte direct addressables
700	Halfword direct addressables
780	Fullword direct addressables
800	TLNVT
880	LNVT
	Channel control block (CHCB)
	Line test module (CYKTST) (if generated)
	Character control block (CCB)
	Line group table (LGT)
	EP modules
	Trace table pointers
	Trace table
Last 2K	MOSS mailbox

Section 21. NCP Storage Format



Local Storage Map (See next page)

Format of the Local Storage Map



Where yy=00, 80, or C0 depending upon the 3725 storage size.

The local storage map is not displayable. It only appears at the end of a dump (with the exception of a dynamic dump).

*Local Storage Registers

Dump Address	Register Address	Contents
X'yy400'	00-07	General Register Group 0 (Level 2)
X'yy420'	08-0F	General Register Group 1 (Level 3)
X'yy440'	10-17	General Register Group 2 (Level 4)
X'yy460'	18-1F	General Register Group 3 (Level 5)
X'yy480'	20-27	General Register Group 4 (Level 1)
X'yy4A0'	28-2F	Invalid
X'yy4C0'	30	Cycle Steal Addr. Reg.—CA position 1
X'yy4C4'	31	Cycle Steal Addr. Reg.—CA position 2
X'yy4C8'	32	Cycle Steal Addr. Reg.—CA position 3
X'yy4CC'	33	Cycle Steal Addr. Reg.—CA position 4
X'yy4D0'	34	Cycle Steal Addr. Reg.—CA position 5
X'yy4D4'	35	Cycle Steal Addr. Reg.—CA position 6
X'yy4D8'	36-3E	Reserved
X'yy4FC'	3F	Cycle Steal Addr. Reg—All CSPs
X'yy500'	40	Interrupt Start Address—Level 1
X'yy504'	41	Interrupt Start Address—Level 2
X'yy508'	42	Interrupt Start Address—Level 3
X'yy50C'	43	Interrupt Start Address—Level 4
X'yy510'	44	Byte Operations Base Register
X'yy514'	45	Halfword Operations Base Register
X'yy518'	46	Fullword Operations Base Register
X'yy51C'	47	CCU Storage Control Register on ECC
X'yy520'	48	IOH Address Substitution Register
X'yy524'	49-4F	Invalid—Hardware Registers
X'yy540'	50-5F	Programmable Registers
X'yy580'	60-6F	Invalid—Hardware Registers

Dump Address	Register Address	Contents
X'yy5C0'	70	Invalid—Hardware Register
X'yy5C4'	71	Operator Address/Data Entry Register
X'yy5C8'	72	Operator Display/Function Sel Ctrl.
X'yy5CC'	73-7A	Invalid—Hardware Registers
X'yy5EC'	7B	Branch Trace Address Pointer
X'yy5F0'	7C	Branch Trace Buffer Count
X'yy5F4'	7D-7F	Invalid—Hardware Registers

Warning

The values in the local storage registers 00 through 7F are those obtained by MOSS and are not necessarily the values that would be obtained if an Input instruction were executed for any given register. For details on local storage registers, see IBM 3725 Communication Controller Principles of Operation, GA33-0013.

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