INTERCOMM

PLANNING GUIDE

LICENSE: INTERCOMM TELEPROCESSING MONITOR

<u>Planning Guide</u>

Publishing History

Publication	Date	Remarks
First Edition	September 1973	This manual corresponds to Intercomm Release 6.0.
Second Edition	March 1976	Corresponding to Intercomm Release 7.0.
Third Edition	September 1978	Corresponding to Intercomm Release 8.0.
Fourth Edition	December 1982	Corresponding to Intercomm Release 9.0.

Intercomm is a state-of-the-art teleprocessing monitor system of SDA, executing on the IBM System 360/370 family of computers and operating under the control of IBM Operating Systems (MFT, MVT, VS1, MVS). Intercomm monitors the transmission of messages to and from terminals, concurrent message processing, centralized access to I/O files, and the routine utility operations of editing input messages and formatting output messages, as required.

The Intercomm product is under continual development designed to keep the system at the forefront of computer technology. This document describes the incremental enhancements that have been added to our latest release, Release 9.0. This release represents a major technology upgrade, incorporating many new features that improve system reliability, ease on-line programming requirements, and facilitate maintenance and installation.

This manual provides a synopsis of each of the Release 9.0 features. While every attempt has been made to ensure the technical accuracy of data in this document, the reader should refer to the various system technical documents for feature implementation specifics.

A User Review Form is included at the back of this manual. We welcome recommendations, suggestions and reactions to this or any Intercomm publication.

INTERCOMM PUBLICATIONS

GENERAL INFORMATION MANUALS

Concepts and Facilities

Planning Guide

APPLICATION PROGRAMMERS MANUALS

Assembler Language Programmers Guide

COBOL Programmers Guide

PL/1 Programmers Guide

SYSTEM PROGRAMMERS MANUALS

Basic System Macros

BTAM Terminal Support Guide

Installation Guide

Messages and Codes

Operating Reference Manual

System Control Commands

CUSTOMER INFORMATION MANUALS

Customer Education Course Catalog

Technical Information Bulletins

User Contributed Program Description

FEATURE IMPLEMENTATION MANUALS

Amigos Users Guide

Autogen Facility

ASMF Users Guide

DBMS Users Guide

Data Entry Installation Guide

Data Entry Terminal Operators Guide

Dynamic Data Queuing Facility

Dynamic File Allocation

Extended Security System

File Recovery Users Guide

Generalized Front End Facility

Message Mapping Utilities

Model System Generator

Multiregion Support Facility

Page Facility

Remote Job Entry (OS)

Store/Fetch Facility

SNA Terminal Support Guide

TCAM Support Users Guide

Utilities Users Guide

TABLE OF CONTENTS

INTRODUCTION

Release 9.0 of Intercomm contains extensive and significant improvements, affecting many areas of the Intercomm teleprocessing monitor. Among the Release 9.0 features are:

- Implementation of many Intercomm User Group PER requests

- Incorporation of funded development requests

- Simplified table coding/expansion procedures

- Debugging aids

- Performance and reliability improvements

- New options

- Eased restrictions

- New installation procedure

Testing procedures for Release 9.0 included both extensive in-house testing and field Beta testing at several user sites which were chosen for the variety of options to be tested and representative operating systems in use. The major documentation updates describing the installation and use of the enhancements was completed prior to Beta testing. Thus, both the Release 9.0 documentation and the code could be field-tested and corrected where necessary before official release to the user base. As a result of this procedure, users are assured of a stable release, and that upgrading to Release 9.0 can be accomplished smoothly.

In the following chapters, the Release 9.0 enhancements are described in detail, along with the accompanying documentation upgrades, and conversion considerations for current users of Intercomm.

Chapter 2

RELEASE 9.0 FEATURES

2.1   FEATURE CATEGORIES

For convenience and planning purposes, the Release 9.0 enhancements and new features have been grouped into the following categories:

- Upgraded VSAM support

- Expanded Message Mapping Utilities support

- General Front End improvements

- Additional VTAM support options

- Logging, restart, and recovery upgrade

- Eased restrictions on COBOL programming interfaces

- Improved debugging and system recovery aids

- Table coding changes

- System control command changes and additions

- General system improvements

- New installation procedure

For each of these categories, the individual items will be described together with the impact, if any, on system externals. A few of these improvements were originally available and tested as experimental SMs. However, the interrelationship with other enhancements necessitated incorporation of such code in official Release 9.0.

2.2   UPGRADED VSAM SUPPORT

All three types (KSDS, ESDS, and RRDS) of VSAM files are now supported, along with base and alternate index processing, and fixed, variable-length and spanned records. Access may be either sequential or direct by key, RBA or RRN as appropriate to the data set type. Access is controlled by options requested via the File Handler Control Word (FHCW), and the number and type of parameters passed to the File Handler from the application program for a VSAM request (GETV/PUTV). All VSAM feedback codes which are currently documented by IBM are processed, and several additional codes are returned to the calling program (via the FHCW) for appropriate user error recovery action.

Documentation Changes: Assembler Language, COBOL and PL/1 Programmers Guides.

New External Options: None

Installation: Automatic

2.2.1   VSAM File Open Processing

During Intercomm startup, File Handler initialization opens all files listed via the execution JCL DD statements (before the //PMISTOP statement) in order to initialize the internal Data Set Control Table for subsequent on-line file access processing. If a VSAM file is incorrectly defined and cannot be opened or processed, or needs to be verified (via IBM's IDCAMS utility), an informative error message is issued and the file is marked as locked. It will be unavailable for on-line processing; that is, a select request for the file will receive a return code of 9. The Intercomm system will not abend. Eventually, the user must decide whether to continue execution without the erroneous file(s), or to close down (abend/cancel) the on-line system, correct the file, and restart Intercomm. If executing under MVS, the file may be deallocated from Intercomm, corrected off-line and then reallocated to Intercomm and opened for processing. New FILE command options permit the allocation/deallocation of files under MVS.

For initial testing, VSAM files defined in the JCL as DUMMY data sets are supported. A select request will be successful, a retrieval (GETV) request will return a record-not-found code, a disposal (PUTV) request will be successful (ignored by the File Handler), and a release request will also be successful.

The FAR option OPEN has been extended for VSAM files. If requested, an ACB will be opened at startup for the specified VSAM file (if usable, see above) and will remain open until a close is specifically requested by the user, or the system is closed down.

Documentation Changes: Operating Reference Manual
                         File Recovery
                         Message and Codes

New External Options: FAR parameter: OPEN=VSAM

Installation: Automatic

2.2.2   Local Shared Resources (Buffer Pools) for VSAM Files

Support has been added to the File Handler to process the VSAM Local Shared Resources facility; that is, the ability is provided to share buffer pools among VSAM files within a single region or address space, thus effecting a considerable saving in storage resources and I/O time, even though adding some processing overhead. This option is implemented via a combination of SPALIST parameters (to define the pools which are created at system startup) and FAR options to specify the eligible VSAM data sets to be connected to the pools. Optionally, the FIX feature of IBM's VSAM BLDVRP macro may also be requested to page-fix the buffer pools and/or I/O-related control blocks in real storage. In addition, File Handler Statistics processing has been expanded to provide information on usage of the LSR pools; both for the hard-copy output, and the on-line system control command. Gathering of LSR statistics requires specification of a global setting for assembly of the IXFDSCTn module to be used for the internal Data Set Control Table in order to provide on-line accumulation counters during file processing.

Documentation Changes: Operating Reference Manual
                         Basic System Macros
                         System Control Commands
                         Messages and Codes

New External Options: SPALIST macro: BLDVRP, BUFFERS, FIX, KEYLEN,
                                         STRNO parameters.
                         FAR options: LSR (eligible VSAM files),
                                         OPEN=VSAM (required)

Installation: Intercomm Interregion SVC (IGCICOM) is required for the FIX option. Coding of &FHSTATS SETA 5 in SETGLOBE (as released) is required (for IXFDSCTn member and all internal Dsect expansions) to implement LSR statistics. Also, if used, the size of the STATFILE data set may have to be expanded (for the additional accumulators). Ensure that IXFRPT01 is included in the Intercomm linkedit.

2.2.3   <u>Cross-Region Read/Write Integrity for Shared VSAM Files</u>

Support is provided to control read/write integrity for VSAM files shared among several on-line Intercomm regions and/or batch regions in the same CPU which use the File Handler to access VSAM files defined with IBM Shareoptions 2 or 4. This is implemented via a new FAR option if the user desires control of concurrent access to the same file from more than one region. Processing for the Intercomm INTENQ and INTDEQ macros has been upgraded to support this feature, including expansion to forty-four characters for the r-name parameter (resource-id), so that the entire data set name can be used for internal issuances of the OS ENQ and DEQ macros. Shared control (cross-region and within a region) is provided for sequential or inquiry processing. Exclusive control is provided within a region and across regions for update and add/insert processing. When using this option for control of shared files, resource contention may necessitate increase of the time-out value (SYCTTBL macro, TCTV parameter) for the affected application subsystems. No enqueue time-out is used. If a subsystem thread times out while maintaining exclusive ownership of a VSAM file, further access to that file will be inhibited if the delayed file I/O operation does not complete before subsystem purge logic gains control. That is, the OS DEQ from exclusive control is not issued because further file integrity cannot be guaranteed. Implementation of this feature will add CPU processing overhead to the system and should therefore be carefully evaluated. An alternative to this option is use of the on-line FILE, DELY and BEGN system control commands to shut down access from one region while another (batch) region is processing the file and/or to confine all accesses to the file to one (satellite) region via JCL. Integrity for Shareoption 3 files is not provided by Intercomm (nor IBM). Cross-region control may be used in conjunction with the LSR buffer pools described previously.

Documentation Changes:	<u>Operating Reference Manual</u> (<u>Basic System Macros</u>) <u>Messages and Codes</u>
New External Options:	FAR option: VSAMCRS (also see INTENQ and INTDEQ macro descriptions: RLEN and SYSTEM parameters)
Installation:	The new module IXFVSCRS must be linkedited with IXFHND01 (automatic if ICOMLINK used to generate Intercomm linkedit control statements and the VSAM global is on in SETGLOBE). IXFVSCRS is Link Pack eligible.

2.2.4   File Recovery Enhancements for VSAM Files

Full file recovery support is provided for all three VSAM file types both during on-line restart (apply before-images) and off-line recreation (apply after-images), if applicable. This support has been corrected and enhanced as part of the general file recovery upgrade described later in this chapter. Backout-on-the-Fly recovery for VSAM files already existed in Release 8.0. While file recovery implementation causes additional overhead for the synchronous logging of before- and after-images, no additional overhead is necessitated because it is a VSAM file; applicable information is acquired from the RPL and the caller's parameter list. The FAR options RECREATE and REVERSE are specified for VSAM files as for other files. The CHECKPOINT FAR option has been expanded to also apply to VSAM files, if desired.

Documentation Changes: File Recovery

New External Options: FAR options: RECREATE, REVERSE and CHECKPOINT
                                       (the DELETE and CHECK options are
                                       not applicable).

Installation: Automatic if File Recovery implemented.

2.3   EXPANDED MESSAGE MAPPING UTILITIES SUPPORT

Several options have been added to the Message Mapping Utilities to make certain specifications easier to use, and to support most of the common terminal types, as follows:

- An MMU system control command (MMUC)

- Improved Alternate Buffer support for IBM 3270 Information Display System devices (CRTs and printers)

- Easier cursor positioning by flagging the desired field

- Additional MAPCLR options

- More Link Pack eligible modules

- Support for IBM 2260 devices

- Generalized support for all devices (TTY, 2740, 2741, etc.)

These options are described in more detail below.

2.3.1   MMUC System Control Command for MMU Processing

An MMU command subsystem is implemented to:

- Provide a screen template display at the requesting, or an alternate, terminal.

- Provide a sample report display at a printer.

- Delete the in-core copy of a map to be reloaded off-line (so that the next application request for the map accesses the newly loaded version).

Documentation Changes:	System Control Commands Message Mapping Utilties
New External Options:	BTVRBTB - MMUC command INTSCT - MMUCOMM subsystem
Installation:	Ensure that the MMUC processing subsystem MMUCOMM is defined in the Subsystem Control Table (INTSCT), and the verb is in the BTVRBTB. MMUCOMM is Link Pack eligible (requires addition of an LPENTRY macro to LPSPA assembly). It is automatically included in the Intercomm linkedit if MMU=YES is coded for the ICOMLINK assembly.

2.3.2   Alternate Buffer Support for IBM 3270 Devices

Support for local and remote devices which accept the Erase Write Alternate command has been enhanced via specification parameters in the BTAM Front End, and for the DVMODIFY extension for a specific device for Back End processing, by requiring the coding of ALTBUF parameters. For MMU processing, coding ALTBUF=YES on the DVMODIFY macro for a particular device denotes that the accompanying BUFFRSZ (and LINESZ) parameter overrides are to be used only for processing map groups for which the EWA command has been specified on the MAPGROUP macro. Additionally, if such a map group is requested for processing for a device without the alternate buffer specification, the command is changed internally to an Erase Write and mapping will be attempted using the buffer size specified via the generalized DEVICE macro parameters, along with any overrides specified via the DVMODIFY macro for the device. Page overflow processing and the trailer row area calculated for that map group will be adjusted by the difference in number of rows, along with the trailer begin row, when encountered. Thus, map groups designed with header maps, body maps specifying a few or repeating lines, and (optionally) trailer maps, are particularly adaptable to alternate buffer sizes which expand in terms of number of rows. The body maps should use START=(NEXT,SAME) specifications, rather than a hard-coded starting row position which limits them to a specific (large) buffer size. Maps with column positions (fields) beyond column 80 may, of course, be used only on those devices with the wider line size (or a map overflow condition occurs). A command override of Erase Write Alternate at MAPEND time is ignored. For printers for which the NOLINES parameter is coded on the DVMODIFY macro, or for which the PAGESZ override is coded on the MAPGROUP macro, the ALTBUF parameter only affects the ultimate segmenting of the output pages into messages of the acceptable buffer size.

Documentation Changes: Message Mapping Utilities
                         Basic System Macros

New External Options: DVMODIFY macro, ALTBUF parameter (also see
                         revisions to other parameter descriptions)
                         MAPGROUP macro, COMMAND parameter no longer
                         requires coding of PAGESZ parameter.

Installation: Automatic, except that the coding of DEVICE and
                         DVMODIFY macros for large buffer (beyond 1920)
                         devices may have to be changed. Also, coding
                         of COMMAND=ERASWRAL will be necessary on the
                         MAPGROUP macro to request alternate buffer
                         processing for applicable map groups.

2.3.3   Easier Cursor Positioning

For output mapping to a 3270 screen, the application program no longer has to provide a relative cursor position in the symbolic map cursor field to override the MMU default of placing the cursor at the beginning of the first unprotected variable field, or at the position specified via an initial value coded for a RELPOS=CURSOR field. Instead, the application program may request cursor positioning by simply flagging the field at which the cursor is to be placed. That is, moving X'FF' (high-values) to the length prefix of the desired field before calling MAPOUT will cause the cursor to be placed at that field in the output message.

Documentation Changes: Message Mapping Utilities

New External Options: None

Installation: Automatic

2.3.4   Additional MAPCLR Options

The following new options for MAPCLR processing to clear the symbolic map area after input mapping, or between output mapping calls, are implemented via the following code requests in byte 4 of the MCW when calling MAPCLR:

    D -   clear only data fields
    A -   clear only attribute/flag prefix fields
    S -   set all attribute fields to SUPPRESS
    C -   set all attributes to SUPPRESS and clear data fields

If any of the above options is specified, the length field in the prefix is not changed.

Documentation Changes: Message Mapping Utilities

New External Options: As described above for the MCW.

Installation: Automatic

2.3.5   More Link Pack Eligible Modules

All MMU device-dependent modules, including MMUDDMT, are now Link Pack eligible.

Documentation Changes: Operating Reference Manual
                          Basic System Macros

New External Options: None

Installation: Automatic when MMU coded for the LPSPA and
                         LPINTFC macros, and the DDM modules are
                         included in the Link Pack area linkedit.

2.3.6   Support for IBM 2260 Devices

MMUDDMF, a user-contributed DDM for 2260 CRTs has been updated to incorporate character-blank fields and added to the Intercomm system. Basic coding for an IBM 2260 has been added to LOGCHARS.

Documentation Changes: Message Mapping Utilities

New External Options: None

Installation: MMUDDMF is automatically included via assembly
                         of the ICOMLINK macro if the &IBM2260 or &GRAPH
                         global is set on in SETENV.

2.3.7   Generalized Support for all Devices

A Teletype DDM (MMUDDMM) has been created to serve as the default DDM (instead of MMUDDM). It will support Teletype and compatible devices which use escape sequences for screen formatting (similar to the Dataspeed 40/1 and 2). It will also support other hardcopy start/stop devices such as 2740 and 2741 terminals. MMUDDMM will perform positional and keyword input mapping, and relative positional output formatting. For output messages, blank spacing will be used for field positioning, and new line or carriage return/line feed characters will be used for line ending characters (depending on DEVICE macro CHAR parameter coding). Commands, control characters and attribute characters will be inserted if defined in LOGCHARS for the device type to be processed. The CNTL field type will also be supported. On input, a tab character will be processed as a field separator if defined as a positional or keyword field separator for the device in LOGCHARS via the DEFAULTS macro, DELIM parameter, or if defined via a SEGMENT macro override. Consecutive field delimiters must be used to indicate the absence of intermediate fields (including repeating fields) which are not entered, unless they are trailing fields.

Documentation Changes: Message Mapping Utilities

New External Options: None

Installation: Define the device(s) to be processed via MMUDDMM in LOGCHARS. Include MMUDDMM in the Intercomm linkedit. Use MMU type designations for the devices in the Back End Station and Device Tables.

2.4   GENERAL FRONT END IMPROVEMENTS

A number of enhancements, and a general cleanup, of the Intercomm Front End Teleprocessing access method interface modules are provided to ease installation and maintenance of the Intercomm Front End. Specific enhancements which affect only the VTAM (SNA) Front End interface are described in the next section. Changes which affect the BTAM/TCAM/GFE interface and/or all Front End interfaces are:

- Permit locking of a device to any verb (transaction code) defined in the Front End Verb Table (BTVRBTB)

- Put all standard system verbs in released BTVRBTB

- Provide for user-coded BTVERB macros in the COPY member USRBTVRB retrieved at assembly of released BTVRBTB

- No restriction on separate assemblies of the Front End Verb Table and the Front End Network Table

- Alternate buffer support for 3270 series devices

- Reorganize order of ENVIRON and SETENV global definition tables for easier updating

- Remove obsolete globals and code from ENVIRON, SETENV, and BTSPA, and the affected Front End modules

- Allow specification of more than 1000 devices, verbs, subsystems and terminal queues for the Front End and Back End Tables

- BTAM-only support enhancements

2.4.1   New Verb Locking Support and BTVRBTB Changes

Locking of a terminal to a verb (requested via the LOCK parameter on a BTERM, LUNIT or LCOMP macro) has been changed to use a half-word index pointer to the Front End Verb Table (BTVRBTB). This allows specification of locking to any of 32,766 verbs defined in the BTVRBTB. Additionally, locking is performed at startup (BTAM/TCAM/GFE), for each logon (VTAM), and at reconnect (dial-up start/stop devices). As before, locking specified via table coding may be overridden via the system control commands LOCK and UNLK. For SNA and start/stop dial-up devices, the overrride applies only for the duration of the current session (connection). The device will be relocked to the verb specified via table coding at the next new logon or dialed connection. This design change now permits separate assembly of the Front End Verb Table (BTVRBTB) from that for the Front End Network Table (user-assigned name). Separate assemblies are recommended for easier maintenance of, and shorter assembly and linkedit times for, both tables. The ICOMLINK macro (to generate the Intercomm linkedit control statements) has been changed to add a new parameter, FETABLE, to specify the user-coded name of the Front End Network Table. The BTVRBTB is automatically included.

Additionally, all Intercomm Front End and commonly used system control commands are now defined (in related groups) in the released version of the BTVRBTB. It is recommended that the user code the COPY member USRBTVRB to be retrieved at assembly time (of BTVRBTB) which contains the additional system commands which require special installation (if used) and all user verbs. See the comments in the released BTVRBTB for the placement of the COPY statement (or coded user verbs), which must be before the PMISTOP statement. Because the verb table is accessed only via indexing, the order of the verbs is immaterial.

Documentation Changes: Operating Reference Manual
                          BTAM Terminal Support Guide
                          SNA Terminal Support Guide

New External Options: ICOMLINK macro, FETABLE parameter

Installation: Code the copy member USRBTVRB for defining user
                          verbs to be added to the released BTVRBTB.
                          Delete the BTVERB macros (and PMISTOP) from the
                          existing Front End Table and give the Network
                          Table a new Csect (not BTVRBTB) and member
                          name. Define that member name for the FETABLE
                          parameter on ICOMLINK when generating the
                          Intercomm linkedit.

2.4.2   Alternate Buffer Support for 3270 Devices

Support for local and remote devices which accept the Erase Write Alternate command has been enhanced via various additional specification parameters required for both Front End and Back End Tables, and for Output Utility report coding and MMU map group definitions. These coding requirements ensure that large buffer output, and/or the EWA command, cannot be sent to an ineligible device, thereby preventing I/O errors at transmission time.

For the BTAM/TCAM Front End Network Table, the alternate buffer size must be specified on the BDEVICE macro via the ALTBUF parameter. Only eligible terminals may point to the BDEVICE(s) containing this parameter. For local BTAM 3270 CRTs, the first BTERM must be that which points to the BDEVICE containing the largest alternate buffer size, as that size is used for acquiring an input buffer. Additionally, the OP2, OP2IND, and OP2RPL parameters of the BDEVICE macro are no longer used for local 3270 output processing. Conversion to the correct write opcode is now executed internally based on the write command at the start of the message text. For both local and remote devices, the CTCHAR parameter on the BDEVICE or VTCSB macros must always start with an F5 (Erase Write command). For the VTAM Front End, the alternate buffer size (eligibility) is acquired from the BIND area received at logon time. Therefore, specification of the alternate buffer size is coded in the VTAM region tables, not the Intercomm Front End.

For the Back End Station Table, it is recommended that MMU device types be used for all devices. For 3270 terminals equipped with alternate buffers, a DVMODIFY macro label must be coded on the STATION macro IOCODE parameter to point to a DVMODIFY macro which specifies the alternate buffer size (BUFFRSZ parameter), and, if applicable, the alternate line size (LINESZ parameter). ALTBUF=YES must also be coded to indicate that the alternate sizes are only to be used for processing alternate buffer messages. The DEVICE macro (TYPE=IBM3270, or IBM3270P) must specify the standard buffer size and line size (1920, 80). Note that for those devices having only one buffer and/or line size which is longer than the standard, the DVMODIFY overrides will always be used by the utilities if ALTBUF=NO is coded.

Message Mapping Utilities processing of alternate buffer size messages is described earlier in this chapter. For the Output Utility to use the alternate buffer and line sizes from a DVMODIFY macro coded with ALTBUF=YES, it is necessary to code ALTBUF=YES and DEV=3270 on the REPORT macro, and (optionally) COMM=X'7E' on the first ITEM macro within that report. An Erase Write Alternate command is internally generated if the COMM parameter is omitted or incorrect. The message is rejected by the Output Utility if a report specifying alternate buffer processing is requested for a device for which no alternate buffer was defined.

Documentation Changes: BTAM Terminal Support Guide
                         SNA Terminal Support Guide
                         TCAM Support Users Guide
                         Message Mapping Utilities
                         Utilities Users Guide
                         Basic System Macros

New External Options: BDEVICE macro, ALTBUF parameter
                         DVMODIFY macro, ALTBUF parameter
                         REPORT macro, ALTBUF parameter

Installation: Automatic, except for coding of applicable
                         parameters for new/existing devices, reports
                         and map groups as described above. Delete OP2,
                         OP2IND and OP2RPL coding on BDEVICE definitions
                         for local 3270 terminals.

2.4.3   Reorganized ENVIRON, SETENV and BTSPA Tables

The Front End ENVIRON global table and SETENV global definition table have been reorganized to place required globals first, followed by general device globals, and then the specific globals for supported device types. Desupported (obsolete) globals have been deleted from the BTAM/TCAM/GFE Front End modules. Additionally, the internal BTAM System Parameter Table BTSPA has been reorganized and consolidated to remove obsolete code.

Documentation Changes: BTAM Terminal Support Guide

New External Options: None

Installation: Modify the new SETENV table to installation
                         requirements (do not use an earlier version of
                         the table). If user-coded GFE interfaces or
                         user modifications to the BTAM or TCAM Front
                         End reference the BTSPA fields, verify that the
                         fields still exist (apply) and that switch
                         settings reference the correct fields.

2.4.4   Specification of More Than 1000 Devices

Internal macro coding to generate sorted indices has been changed to allow the specification of more than 1000 BTVERB macros (verbs), BTERM macros (BTAM/TCAM/GFE Front End), SYCTTBL macros (subsystems and terminal queues), STATION macros (Back End), and LUNIT/LCOMP macros (VTAM Front End). In some cases, the index value has been expanded to a fullword. To process fullword indices, a new entry (BINSRCH3) has been added to the binary search module (BINSRCH). The entry is also addressable via the SPAEXT field SEXBSRC3 for Assembler Language programs.

Documentation Changes: Operating Reference Manual
                         BTAM Terminal Support Guide
                         SNA Terminal Support Guide
                         Assembler Language Programmers Guide

New External Options: None

Installation: If more than 1000 of any of the above listed
                         macros are coded, the global settings in the
                         global table FEMACGBL must be revised upward to
                         the maximum expected devices, or verbs, or
                         subsystems. This expansion may necessitate use
                         of Assembler H and/or a large region size for
                         the assembly step.

2.4.5   STLN/SPLN and STLG/SPLG Command Support

These system control commands now support all BTAM, TCAM and GFE device type interfaces (including the 2741 and Graphics devices) except the leased TTY, Sanders and Wiltek devices. The commands are provided in the released version of BTVRBTB and should be implemented and used when necessary.

Documentation Changes: System Control Commands

New External Options: None

Installation: Automatic (ensure that the commands are in the
                         installation version of BTVRBTB)

2.4.6   Optional CRT=YES Coding for BTERM Macros

CRT=YES is no longer forced for any devices defined via BTERM macros. However, it should be coded for buffered CRT devices to prevent overlaying of output messages.

Documentation Changes: None

New External Options: None

Installation: Ensure that CRT=YES is coded on all BTERMS for 3270 and 2260 series CRT devices to prevent output message overlay (see the BTAM Terminal Support Guide).

2.4.7   ERRSTAT Indices Expanded

The index calculation for error statistics recording tables for leased line and dial-up TTY/2740 devices has been changed to allow this specification on all applicable BLINEs and BTERMs. Note that specification of this option adds some overhead to processing of terminal and line down conditions. The collected information may be displayed via the STAT command.

Documentation Changes: None

New External Options: None

Installation: Automatic if ERRSTAT=YES is coded on applicable BLINEs or BTERMs

2.4.8   BTAM LTRC Enhancement

The line trace snap processing has been changed to incorporate an MVS snaplist (when applicable) and to also snap the DCB and line handler save/work area (see BTAMWORK Dsect) for BTAM line and device transmission troubleshooting.

Documentation Changes: Messages and Codes

New External Options: None

Installation: Reassemble BLHTRACE if not executing under MVS, and BLHSTRC if not using a VTAM Front End.

2.4.9   Revised COPYEXIT Processing

The call to the user exit COPYEXIT for BTAM COPY command processing has been moved to allow the exit to change the sending or receiving terminal-ID, if desired. The passed parameters now point to the 5-character terminal-IDs only (not the BTERMs).

Documentation Changes: BTAM Terminal Support Guide

New External Options: None

Installation: Verify that the existing user COPYEXIT (if used) does not reference any fields in the BTERM (no longer provided).

2.4.10   Revised BT071I Message

The message has been changed to provide the terminal-ID of the first terminal on the affected line (not the BLINE address), and the UCB (channel) address of the line. This information can be used immediately to restart the affected line (via STLN) or to close and reopen the line group (SPLG/STLG commands) in order to clear the indicated problem. The latter action is recommended if this message appears, especially if it reappears after issuing a STLN.

Documentation Changes: Messages and Codes

New External Options: None

Installation: Ensure STLN/SPLN and STLG/SPLG commands are implemented in the installation BTVRBTB.

2.4.11   Back End Release Request Via FESEND

Instead of generating a FECMRLSE, or a RLSE command, from an application program, the FESEND option to request release (to a CRT) of the next output message placed on a terminal queue is now available for all terminal types. Previously, this option was only available for VTAM devices. If a combined (BTAM/VTAM) Front End is in use, this option should be used instead of a FECMRLSE to ensure that the receiving terminal remains in receive mode.

Documentation Changes: COBOL, PL/1, BAL Programmer's Guides

New External Options: None

Installation: Optionally revise application programs which use a FECMRLSE or generate a RLSE command.

2.4.12   BTAM Simulator Enhancements for Large Buffered 3270s

The BTAM Simulator (BTAMSIM) and the simulated local 3270 input-ouput display module (SIM3270) have been updated to process alternate buffers and the Erase Write Alternate command. SIM3270 will also process printer output. SIM3270 examines the DEVICE and DVMODIFY buffer and line size specifications to determine standard and alternate buffer display sizes, depending on the write command, and will switch display sizes when appropriate.

Documentation Changes: Operating Reference Manual

New External Options: None

Installation: Automatic (when using a simulated Intercomm system). Note that a simulated BTAM local 3270 environment can be used to test Back End 3270 processing (subsystem, maps, edit and output, etc.) even though 3270 devices in the live system are accessed via remote BTAM, TCAM or VTAM. CREATSIM must be used to generate simulated 3270 input messages.

2.4.13   Reinstallation Notes

When reinstalling the BTAM/TCAM/GFE Front End and Back End tables under Release 9.0, verify that table coding is correct according to recommendations provided in the associated Intercomm manuals. Ensure that all network control commands listed in System Control Commands and the released version of BTVRBTB are implemented. Also ensure that the user modification required by IBM changes to the DCB macro has been reapplied to the LINEGRP macro (if applicable – see Technical Information Bulletins). A new verb validation module (common to all Front Ends) has been added; ensure INTVRB00 included in the Intercomm linkedit.

2.5   NEW VTAM SUPPORT OPTIONS

The following enhancements and expanded support options have been implemented:

- Define the control terminal as a VTAM LU

- Status display command (VTST)

- Add VTAM devices to TALY,FE command

- Autoup Facility (individual device, VTAM Front End)

- Logoff via SPLU command (no parameters)

- Optionally use BTAM sequence number (for MSGHBMN) instead of session number whether or not BTAM Front End used

- Under Multiregion with RAP, execute terminal to region lock at each logon

- Provide binary search of VTIDTABL using either VTAM or Intercomm device (terminal) id

- Prevent VTAM startup or a STLU from hanging when trying to acquire a busy LU.

- Support System Request key to reset SDLC 3270 CRT

- Support retry after VTAM short storage condition during SIMLOGON

- AIDDATA - REPLACE=YES option implemented for VTAM 3270 CRTs.

- Provide VTSAMP - Sample table coding definitions

- Document SCS (3270) printer support

- Revised Back End CRT message release processing

- Provide shared LU (printer) support across VTAM regions

2.5.1   VTAM Control Terminal Support

The Intercomm control terminal may be any interactive component of a VTAM LU, or a BTAM leased line terminal, or the CPU console defined within the BTAM or VTAM Front End Network Tables (but not both). If the control terminal is a VTAM LU, it must be dedicated to Intercomm as it is automatically acquired at startup. The alternate to the control terminal must be of the same type (BTAM or VTAM) as the primary. If only a VTAM network is in use, the BTAM Front End may be entirely eliminated by defining the control terminal (and CPU console) in the VTAM Front End Network Table.

If only a VTAM Front End is present, it is started at Intercomm startup (START parameter coding of the VCT macro is ignored), and the LU (component) designated as the control terminal will be acquired. If a SPLU is issued for the control terminal, the alternate will be acquired (if necessary). If there is no alternate, or it cannot be acquired, a WTOR is issued to the CPU Console requesting a decision on whether to ignore the SPLU, abend Intercomm, or dynamically assign an alternate. Similar action is taken if the VTAM network goes down and the primary or alternate control terminal is not the CPU console.

Documentation Changes: SNA Terminal Support Guide
                          Messages and Codes

New External Options: LUNIT/LCOMP macros: CNTRL parameter
                          VTLSB macro: LUTYPE=SYSCON (for CPU console)

Installation: Include the new module VT01MOD for processing
                          messages to the CPU console (if defined as a
                          VTAM LU for use as the primary or alternate
                          control terminal).

2.5.2   VTAM Status Display Command

A new Front End system control command, VTST, has been implemented and defined with the other VTAM control commands in the released BTVRBTB. Via subparameters, various aspects of the VTAM network may be displayed, as follows:

- All LUs and their components, or only all LU (LUB) definitions, or only sense information for all disconnected VTAM devices (if applicable)

- Only all connected (in session) LUs (and components), or only all unconnected LUs (and components)

- Only the status of a specific LU (component), or only the sense information for that LU (if it was disconnected from Intercomm due to an exception response)

- Only total information (number connected, logons queued) for the VTAM network

- If no subparameters are provided, a status display for the entering component is returned

Information displayed includes the VTAM and Intercomm ids, device type, active status, connected status, flag byte settings, verb and region to which the component is locked (if any), or sense information (if requested).

Documentation Changes: System Control Commands
                            SNA Terminal Support Guide

New External Options: None

Installation: Ensure VTST defined in BTVRBTB, include new
                            module VTAMSTAT

2.5.3   Displaying VTAM Network via TALY Command

The TALY (TALY,FE) command has been enhanced to display all VTAM Front End devices (LUs and components) in addition to the BTAM/TCAM/GFE network terminals. Information displayed includes the component and LU names, the VTAM id, the device status (acquired, logged on, deactivated, etc.), the device type, number of messages queued for transmission, the number of components of a LU, and the number of those components which are active. In addition, a totals line provides the current number of active sessions, the maximum concurrent sessions attained since startup, and the maximum concurrent sessions allowed.

Documentation Changes: System Control Commands
                         SNA Terminal Support Guide

New External Options: None

Installation: Automatic (if a BTAM network is not defined, reassemble TALLY to eliminate BTAM-dependent code)

2.5.4   Autoup Facility for VTAM Devices and Network

Autoup processing, comparable to that available for the BTAM Front End, has been implemented for VTAM LUs. An interval may be defined, in minutes, for a retry to acquire a LU after the previous session failed. A SPLU command may be used to deactivate autoup attempts. An autoup interval may also be specified to handle a VTAM network failure. When that interval expires, an Intercomm VTAM startup will automatically occur (an internal VTCN,START is issued).

Documentation Changes: SNA Terminal Support Guide

New External Options: VCT macro: VTUPINV parameter
                         LUNIT macro: UPINTV parameter

Installation: Include the new module VTAUTOUP in the Intercomm linkedit.

2.5.5   Logoff via SPLU Command

Processing of the SPLU command has been changed so that it may be used to effect a logoff from Intercomm from the entering terminal. Entering SPLU without any parameters is the equivalent of entering SPLU with the terminal-id of the entering terminal and HALT. Thus, the operator does not need to know the id of the terminal, nor is an additional logoff command needed.

Documentation Changes: System Control Commands
                          SNA Terminal Support Guide

New External Options: None

Installation: Automatic

2.5.6   Optional Use of BTAM Sequence Number for Log Tracking

By default, the VTAM session number is placed in the MSGHBMN field of the Intercomm message header. Because session numbers may be duplicated across devices, this makes tracking of input messages via the Intercomm log difficult and presents problems for the effective use of Log Analysis to track response times, etc. Log Analysis uses the MSGHBMN field to follow a transaction from original input, and through all subsystem processing, until final transmission. To alleviate these problems, the user has the option of requesting that the BTAM sequence number field (in BTSPA) be used for logging. This option applies even if a BTAM (TCAM/GFE) Front End has not been defined and the BTAM interface support modules are not in the linkedit. This option is implemented for the entire VTAM Front End via the SEQNO parameter of the VCT macro (a pseudo BTSPA is appended to the VCT if the BTAM global is not on in SETGLOBE).

Documentation Changes: SNA Terminal Support Guide

New External Options: VCT macro: SEQNO parameter

Installation: Automatic

2.5.7   Execute Terminal to Region Lock at Logon

For installations with a Multiregion system, Region Associated Processing (RAP) is now available for the VTAM Front End as well as the BTAM Front End. This option is requested via the MRPASSW parameter on the LUNIT (or LCOMP) macros. Terminal locking is performed at each logon. Therefore, a device will be assigned to the defined region at the beginning of each session, even if that locking is later overridden via the ULKR or LOKR system control commands.

Documentation Changes: System Control Commands
                         SNA Terminal Support Guide

New External Options: LUNIT macro: MRPASSW parameter
                         LCOMP macro: MRPASSW parameter

Installation: Automatic (if a Multiregion system with RAP
                         processing is installed)

2.5.8   Binary Search of VTAM/Intercomm Terminal Id Table

For many installations implementing a VTAM Front End, the five-character terminal-id restriction of Intercomm is incompatible with the eight-character LU-id available within the VTAM region. Therefore, a conversion table may be coded as part of the Intercomm VTAM Front End (at the end of the Network Table or as the separate member VTIDTABL), using the Intercomm VTIDTAB macro. As VTAM networks have grown, a sequential search of this table during receive and send processing has proven inefficient. Assembly of the VTIDTAB macro and internal VTAM Front End processing has been changed to provide a binary search of the table no matter in what order the macros are coded. Two indices are generated: VTIDINDX (sorted by VTAM-id) and ICIDINDX (sorted by Intercomm-id). Conversion from either id to the other is thus efficiently accomplished.

Documentation Changes: SNA Terminal Support Guide

New External Options: None

Installation: Automatic (ICOMLINK automatically generates an
                         include for VTIDTABL if a VTAM Front End is
                         specified)

2.5.9   VTIDCONV Macro Available for User Exit Processing

The Intercomm VTAM Front End uses a VTIDCONV macro to convert VTAM LU-ids to Intercomm terminal-ids, and vice versa, and utilizes the VTIDTAB indices for a binary, rather than sequential, search of the id synonym table VTIDTABL. This macro is now documented for those installations needing conversion information for user exit processing.

Documentation Changes: SNA Terminal Support Guide

New External Options: VTIDCONV macro

Installation: Automatic

2.5.10   Prevent Delays When Acquiring a Busy LU

During Intercomm's VTAM startup processing, a STLU command is internally generated with the ACQ and Q options for each LU for which ACQ=YES was coded on the LUNIT macro defining the LU in the Front End Network Table. If the LU to be acquired is busy (logged on to another VTAM application), startup may hang (no RELREQ exit provided for that application, or operator ignores logoff request). To prevent startup from a long delay, if the internally-generated SIMLOGON request does not complete within two minutes, a message is issued to the CPU console so that corrective action may be taken. The message will be reissued every two minutes if the LU is still busy. After ten minutes have passed, a WTOR is issued to the CPU console giving the operator the choice of waiting for the LU (previous message will be reissued again at two minute intervals), requesting startup to continue without the LU (SIMLOGON remains queued), or abending Intercomm.

If a STLU command with the ACQ and Q options is issued from a terminal, and the LU cannot be immediately acquired, an interim message is returned to the requesting terminal. The requestor can take corrective action (determine why requested LU is still busy or cancel request via a SPLU). When the queued SIMLOGON subsequently completes (if not cancelled), the requestor is also notified. The status of the LU can be displayed via the VTST command.

Documentation Changes: Messages and Codes

New External Options: None

Installation: Automatic

2.5.11   SDLC 3270 CRT Reset via System Request Key

For SDLC 3270 CRTs, the System Request key may be used (like the RESET key on BSC 3270 CRTs) to reestablish communication, or enter an additional message, if no response is received to the previous input. This might be necessary after a system command or application verb is input, and the processing program does not send a response to the requestor.

Documentation Changes: SNA Terminal Support Guide

New External Options: None

Installation: Automatic

2.5.12   Retry After a Short Storage Condition

When the VTAM Front End is trying to acquire a LU, a VTAM short storage condition may temporarily occur. Code has been added to retry the SIMLOGON up to 16 times.

Documentation Changes: None

New External Options: None

Installation: Automatic

2.5.13   REPLACE=YES Option for AID Key Processing

The REPLACE=YES option for coding of the AIDDATA macro is also implemented for VTAM 3270 CRTs. This causes input data accompanying a defined PF key to be discarded.

Documentation Changes: Basic System Macros

New External Options: None

Installation: Change AIDDATA coding in the Front End Network
                              Table, as desired.

2.5.14   VTSAMP - Sample VTAM Network Table Coding

The new module VTSAMP provides sample VTAM macro coding for defining all supported VTAM device types and options to Intercomm. It is also illustrated in the new edition of the SNA manual.

Documentation Changes: SNA Terminal Support Guide

New External Options: None

Installation: Use the sample coding as a guide to install the new VTAM options described in this section.

2.5.15   3270 SCS Printer Support

SCS printers are supported under Intercomm as an LUTYPE of 3270S. A bindarea must be provided.

Documentation Changes: SNA Terminal Support Guide

New External Options: None

Installation: Define the bindarea described in the above manual.

2.5.16   Back End CRT Message Release Processing Changes

Due to the use of half-duplex flip/flop protocol for 3270 CRT processing, a Back End generated release request (via FECMRLSE or RLSE command) is ineffective because a Change Direction (CD) command is sent to VTAM after transmission of an output message. The CD command allows new input from the terminal. If an application program intends to send a second output message in order to purposely overlay the first (displayed) response, the release option for the FESEND call should be used when queuing the first output message. The release option indicates to the Intercomm VTAM Front End that a CD should not be sent until after transmission of the subsequent message. Note that the terminal operator can input to the system using the RESET key (3270N) or System Request key (3270S).

Documentation Changes: SNA Terminal Support Guide
                         COBOL, PL/1, BAL Programmers Guides

New External Options: None

Installation: Optionally revise application programs which use a FECMRLSE or generate a RLSE command.

2.5.17   Shared Printer Support

Three user exits are supplied to implement sharing of logical units between Intercomm application regions, or between Intercomm and other VTAM application regions. These exits control the acquiring and releasing of a logical unit depending on coding of two new parameter options on the VTLSB macro, and whether output messages are queued for an associated device. The exits provide for processing a RELREQ request from VTAM (honored after all queued output is transmitted) and for reacquiring the shared device (if necessary) when output is queued for it. This implementation requires that each application region sharing the device provide for RELREQ processing. The share options are controlled via the new RELREQ and OUTQ parameters on a VTLSB macro associated with a particular device or group of devices. In addition, the exits must be defined via the VTLVB macro.

Documentation Changes: SNA Terminal Support Guide

New External Options: VTLSB macro, RELREQ and OUTQ parameters

Installation: Include the new exits (VTURLRX1, VTUROTX1 and VTURSDX1) in the Intercomm linkedit. Code VTLSB parameters for the applicable devices and exit parameters for the VTLVB macro as described in the SNA manual.

2.5.18   Reinstallation Notes

The new edition of the SNA Terminal Support Guide provides documentation of the new VTAM support features. Read it carefully before installing the new features. All macro descriptions have been revised to incorporate the new features. The released version of SETGLOBE has the &VTAM global set to 1 for assembly of released versions of common Front End modules. Ensure that the new verb validation routine INTVRB00 and the new modules related to the new features are in the Intercomm linkedit.

2.6   LOGGING, RESTART AND RECOVERY ENHANCEMENTS

Substantial improvements to log processing and to speed up and control message restart and file and data base recovery have been made, as follows:

- x37 abend protection for disk logging via sequential output disk file flip/flop facility

- Concatenation of disk log data sets for system (message) restart

- FEOV subcommand for sequential output disk (log) files

- Utility to find and set End-of-file for sequential output and Intercomm log files

- Message Accounting record processing enhancements

- Logging User Exit (USERLOGE)

- Ensure final checkpoint written at closedown

- Serial (single-thread) restart option and user exit to allow new input

- File Recovery logging improvements

- Off-line File Recovery Enhancements

- TOTAL Data Base Release 8 restart interface upgrade

2.6.1   x37 Abend Protection for Sequential Disk Files

Called the Flip/Flop Facility, this enhancement invokes automatic protection of Intercomm from a B37 (D37, E37) abend due to running out of space on a BSAM output disk file or the Intercomm log (when logging to disk). Both a primary and alternate disk data set must be allocated and defined via JCL for the Intercomm execution step. A new FAR parameter, B37, requests the abend protection for the primary data set. When the first data set becomes full, the potential x37 abend is trapped, a message is issued to the console so the operator can invoke a job to unload that data set, and subsequent output is to the alternate data set. When the second data set becomes full, if the primary has been unloaded (operator replied to CPU console message), Intercomm automatically flips output back to the primary. If the first is not yet unloaded, Intercomm issues another console message and enters a hard wait until the operator replies to the original message. This new facility is particularly useful for those days when peak processing loads require more output space than allocated for the primary disk data set, or even the primary and its alternate.

Documentation Changes: Operating Reference Manual
                          Messages and Codes

New External Options: FAR parameter: B37

Installation: Include the new module IXFB37 in the linkedit
                          (automatic via ICOMLINK); define primary and
                          alternate disk files via JCL. Code the FARs for
                          applicable files. Ensure IXFFAR is in Intercomm
                          linkedit.

2.6.2   Disk Log Concatenation for System Restart

As an adjunct to the disk logging x37 protection enhancement, Intercomm restart processing has been changed to permit concatenating disk log files (in reverse order of creation) for reading backwards through the log in restart mode. Tape log processing remains the same. Disk and tape log data sets may not be intermixed.

Documentation Changes: Operating Reference Manual

New External Options: None

Installation: Define disk log data sets in reverse order on
                          RESTRTLG DD statement.

2.6.3 Forcing End-of-file on Sequential Output Disk Files

The FILE,ddname,FEOV command has been enhanced to apply to sequential output disk files (except the Intercomm log) for which x37 abend protection has been invoked. Internally, the file will be closed and an automatic flip to the alternate (or back to the primary if the alternate is being closed) will occur. The specified file is then eligible for off-line unload. The FILE,ddname,CLOSE command may not be used for x37 abend protected files.

Documentation Changes: System Control Commands

New External Options: FILE command as described above.

Installation: Automatic (if FILE command (GPSS) implemented).

2.6.4 EOF Utility for Sequential Output and Log Files

A new off-line utility ICOMFEOF, has been developed to find and set an end-of-file on a sequential output data set which was not closed due to a system crash or unrecoverable I/O error. Via a PARM request on the EXEC statement, this utility can also be used for the Intercomm log (tape or disk), wherein the utility checks for valid log codes and ascending date and time sequences in the message header of the first record in each block. When an invalid record is encountered, the utility backs up the data set to the last valid record and places an EOF after it. This utility cannot be used for VSAM files.

To use this utility for a tape data set, the tape must be preformatted with a tape mark at least at the end of the tape. The Intercomm User Contributed Library contains a sample program for preformatting tapes. For disk data sets, an IEBGENER must be executed first. This IBM utility will copy the entire allocated extent(s) of the disk data set and place an EOF at the end of the last known (in the DSCB) extent. For the Intercomm log, RECFM=U must be specified for both the input and output disk data sets. ICOMFEOF will then find the true end-of-file for the data set and close it so that it may be subsequently used as an input file.

Documentation Changes: Operating Reference Manual
                         Messages and Codes

New External Options: None

Installation: See the documentation for execution JCL; no
                         special linkedit required.

2.6.5 Message Accounting Record Processing Reliability

In order to speed up restart processing, Intercomm logging has been revised to ensure that message completion status is recorded as soon as applicable, based on restart criteria defined for terminals, subsystems and multiregion control region processing. The defaults for these three system areas are LOG=YES and RESTART=YES. If LOG=NO is coded, RESTART=NO is forced; that is, the message is considered completed as soon as the 01 (subsystems), F2 (terminals), or C1 (multiregion) log record is encountered. If logging is desirable (for Log Analysis or SAM statistics reporting), evaluate the coding of RESTART=NO for all but critical subsystem and terminal output processing so that message completion status can be recorded. This will prevent unnecessary backward processing of the Intercomm log at restart time. Additionally, the routing of the message RL052I, which provides the latest read back point (number of messages completed) has been changed to go to the control terminal and SYSPRINT. The message accounting record is logged (code=X'FF') and can be printed via the LOGPRINT utility. Processing of that record has been revised to provide a date and time stamp in the message header. Therefore, the issuing time of the message can be used to find the last message accounting record on the log and then determine subsequent bottlenecks which may have prevented later message accounting recording. These considerations will also speed up file and data base recovery at restart time.

Documentation Changes: None

New External Options: None

Installation: Automatic (MSGAC must be included in the Intercomm linkedit)

2.6.6 Logging User Exit - USERLOGE

A new user exit, USERLOGE, is provided at message logging time so that an installation can perform special processing of selected log records. Such processing might be dynamic recording of response times, spooling FA log records (for later SAM reporting), security processing recording, etc. All messages except file recovery and message accounting records are passed to the user exit after they have been logged. Note, however, that the log code in the message header is the internal, not the external, code. The user exit is called just before exit from LOGPUT; therefore all messages are passed to it even if LOG=NO was coded, or an invalid log code is used. This exit should not be used for log processing that can be executed via off-line processing of the Intercomm log, as it will add to system overhead.

Documentation Changes: Operating Reference Manual

New External Options: None

Installation: Code and include module USERLOGE in the
                         Intercomm linkedit, if desired.

2.6.7 Final Checkpoint Processing

Closedown logic has been changed to ensure that a final checkpoint is written and logged before closedown (immediate or normal) completes, and before the checkpoint file is finally closed by the File Handler. A message is issued if closedown is delayed by checkpoint processing.

Documentation Changes: Messages and Codes

New External Options: None

Installation: Automatic (if checkpoint processing implemented)

2.6.8   Serial Restart and User Controlled Input

When restarting messages related to critical file or data base updating, it may be desirable to process those messages serially, that is, in the same order in which they were originally processed (entered), so that a backed-out file is correctly restored. It may also be desirable to prevent new transaction requests against those files from being honored until all restarted messages have completed processing. To accomplish a serial (single-threaded) restart, the module REQONDDQ and related code has been substantially revised and is now a supported element of the Intercomm system. In addition, a user exit, USRSEREX has been provided which can be used to control new input (allow security sign-on, non-critical inquiry processing, etc.) that may execute in multithread mode during serial restart. Terminal output messages, front end commands, and checkpoint and output utility processing are automatically permitted during serial restart. This facility requires installation and definition of a default DDQ data set (to hold restarted messages until processed).

Documentation Changes: Operating Reference Manual

New External Options: Revise the released version of USRSEREX, if desired

Installation: Include REQONDDQ (and USRSEREX) in the Intercomm linkedit to activate this option. Also install DDQ Facility and define a default DDQ data set for serial restart (if not already available for other processing).

2.6.9   File Recovery Logging Improvements

Processing of file recovery log records has been changed so that a date and time stamp is now provided in the message header prefix to the file recovery record. This additional information is printed for both pre- and post-images provided by the LOGPRINT utility when the FILE option is used, by the off-line file recreate utility IXFCREAT when printing of file after-images is requested, and when on-line file recovery before-images processing occurs during message restart.

Documentation Changes: Operating Reference Manual
                         File Recovery

New External Options: None

Installation: IXFSNAPL must be included in the linkedit for file recovery record printing. For IXFCREAT and on-line restart image printing, a DD statement for FRLOG must be provided.

2.6.10   Off-line File Recovery Enhancements

In addition to the full support for VSAM files described earlier, the following enhancements are provided to off-line recreation via IXFCREAT of all recoverable files:

- Optionally print all applied recreation (after-image) records

- Optionally print only those records which could not be applied (duplicate key for an add, etc.)

- Print date and time from the message header to show when the after-image was originally created on-line

- Allow concatenation of multiple (tape or disk) log files from different runs

- Optionally start recreation from a specific date and time within the input log file(s)

- Print recovery statistics (number of records applied and number in error)

Documentation Changes: File Recovery

New External Options: Code SNAP=ERR for PARM value on EXEC statement to print only error records (if any) and statistics.

Installation: Omit FRLOG DD statement if printing of statistics or recreation records is not desired.

2.6.11   TOTAL Data Base Release 8 Support Enhancements

The Intercomm-supplied interface to the TOTAL Data Base has been upgraded to support Release 8 of TOTAL. Subsystem processing remains the same. The major change is that the Cincom-supplied interface module is now called CSTAOSST, or CSTAOSMT, or CSTAOSMV, depending on the IBM operating system in use. The entry point DATBAS does not exist in these modules. Instead, the entry point TOTINT must be changed (via linkedit) to DATBAS so as not to cause confusion with the Cincom-supplied module CSTAOSIC (containing the Csect TOTINT). When TOTAL is executing as an attached subtask to Intercomm, the attach entry point is now called TOTALMT. Other enhancements include the option to provide the TOTAL data base descriptor name via a DB parameter in the PARM field of the Intercomm EXEC statement (to override the name supplied via the &TOTDESC global in SETGLOBE), and more detailed documentation of the use and installation of the COPT and UNPT commands, to dynamically couple and uncouple TOTAL (to/from Intercomm), in the DBMS Users Guide chapter on TOTAL.

An additional enhancement is a revision of the TOTAL backout utility PMITOTRS. Only the last TOTAL log tape need be defined in the JCL. Backout may be to the last Intercomm checkpoint (requires a DD statement for CHEKPTFL), to the last checkpoint on the TOTAL log, or to a specific checkpoint on the TOTAL log. The option chosen is defined via the PARM value on the EXEC statement.

Documentation Changes:	Data Base Management System Users Guide Messages and Codes
New External Options:	Intercomm EXEC statement PARM field: DB=descriptor-name. PMITOTRS EXEC statement PARM field: tttttttt (checkpoint-time), or L (last checkpoint).
Installation:	Linkedit CHANGE statement required to rename the TOTINT entry to DATBAS (see above); include statements needed for new TOTAL interface module names.

2.7   COBOL SUBSYSTEM/SUBROUTINE INTERFACE UPGRADE

A number of enhancements to the COBOL programming support have been made, as follows:

- Subsystem to subroutine interface provides for easy nesting of subroutine calls

- The amount of Dynamic Working Storage to acquire for the Linkage Section of a (reentrant) COBOL subroutine may be specified via the SUBMODS macro

- System parameters may be requested for a COBOL subroutine via the SUBMODS macro

- DWS checking will be performed for COBOL subroutines (if activated)

- DWS checking for COBOL subsystems and subroutines may be controlled via the STRT/STOP system commands

- The size of the DWS area available for a COBOL subsystem is increased to 64K

- REENTSBS table cleanup and revisions

- Subroutine index code requested via a COBREENT call will be validated before transfer of control

- CONVERSE interface upgraded to eliminate processing overhead

- Ensure save area chaining intact after a subroutine call

In addition, the COBOL Programmers Guide has been substantially revised and updated. Only reentrant COBOL programming methods are described in detail. A sample subsystem has been provided to illustrate MMU and VSAM file processing techniques and the new COBOL subroutine interface. Testing procedures are revised to illustrate both simulation processing and Test Mode.

2.7.1   New COBOL Subroutine Interface Support

The called subroutine interface has been changed to allow COBREENT to acquire the Dynamic Working Storage required by a COBOL subroutine. The size of the area to be acquired is specified via the GET parameter on the SUBMODS macro defining the subroutine in the REENTSBS subroutine table. The requested size may be up to 128K. This enhancement eliminates the necessity for the COBOL calling routine to pass the DWS (and 256-byte prefix) as a parameter when calling the subroutine. In addition, if any system parameters (input-message, SPA, SCT, return code) are required by the subroutine, some or all may be requested via a new PARM parameter on the SUBMODS macro. With this new support, several advantages are provided for the COBOL programmer: coding of a COBOL subroutine is exactly the same as for a COBOL subsystem, COBOL calls may be nested without regard to the DWS needed by the originating subsystem, and all subroutine calls are in the same format as Intercomm system routine calls. Thus, maintenance of COBOL subsystems and related COBOL subroutines becomes independent of each other.

Documentation Changes: COBOL Programmers Guide
                         Basic System Macros

New External Options: SUBMODS macro: GET and PARM parameters

Installation: Automatic (downward compatibility for existing
                         COBOL programs is provided)

NOTE: Both PREPROG and COBREENT have been substantially rewritten and have been renumbered.

2.7.2   DWS Checking Changes

As part of the COBOL subroutine interface enhancement, DWS checking will also be performed (if activated) for COBOL subroutines when COBREENT acquires the Dynamic Working Storage for the subroutine (GET specified on the SUBMODS macro). In addition, DWS checking for both COBOL subsystems and COBOL subroutines may be controlled via the STRT/STOP GPSS system control commands. If requested via the SPALIST parameter DWSCHK=YES, DWS checking will be automatically started at Intercomm startup. Otherwise it must be requested via the STRT command. When started by command, it will apply only to new threads of a COBOL subsystem or new calls to a COBOL subroutine (ignored for existing threads/calls).

Documentation Changes: COBOL Programmers Guide
                            System Control Commands

New External Options: STRT/STOP commands: DWSCK option

Installation: Automatic (if GPSS system commands implemented)

2.7.3   COBOL Subsystem DWS Area Size Change

In conjunction with the expansion of Intercomm pool sizes (described later), the size of the DWS area available to a COBOL subsystem has been increased to 64K (less 304 bytes). This is particularly useful for programs processing VSAM files.

Documentation Changes: COBOL Programmers Guide
                            Basic System Macros

New External Options: None

Installation: SYCTTBL macro, GET parameter now allows a value
                         up to 65232 to be specified.

2.7.4   REENTSBS Table and Index Code Changes

The REENTSBS table has been changed to specify all system routines via SUBMODS macros. It is recommended that user SUBMODS definitions be defined in the COPY member USRSUBS to be added to REENTSBS (where indicated) at assembly time. Also, the COBOL copy member ICOMSBS should be updated to add index values for all user subroutines which must be defined in REENTSBS and called via COBREENT. If these system standards are observed, the Intercomm routines to provide multi-threading (reentrancy) for COBOL programs will enhance system performance and ease COBOL programming requirements.

In addition, to prevent program checks (core clobbers), the subroutine index passed by a calling COBOL program to COBREENT is validated before control transfer, to ensure that the indicated routine is defined in the REENTSBS table provided in the Intercomm linkedit. If it is not present, a message is issued and an ISK occurs.

Documentation Changes: COBOL Programmers Guide
                         Operating Reference Manual
                         Messages and Codes
                         Basic System Macros

New External Options: None

Installation: Code the COPY member (USERSUBS) to add user
                         SUBMODS definitions to the release version of
                         REENTSBS, and add user index codes to the
                         release version of ICOMSBS.

2.8   IMPROVED DEBUGGING INFORMATION AND SYSTEM RELIABILITY

The system programs in the area of program check, abend, and runaway (looping) thread control have been redesigned to ensure greater system reliability and recovery from all but critical storage destruction problems. In addition, related debugging aids such as trace and snap printouts, associated error messages, and the related documentation, have been revised to provide more immediately useful information. The enhancements include:

- Revised program check (SPIEEXIT, SPIESNAP) recovery

- Revised program loop recovery (IJKTLOOP, STAERTRY)

- Revised system abend recovery/clean up (STAEEXIT)

- MVS Trace Table and control blocks in snap 122 after abend

- New program check and subsystem timeout messages

- New messages also printed as second area in snaps 126 and 118

- Revised thread purge processing

- Informative message if thread cannot be purged (permanently disabled)

- New TALY,DA command to display thread status

- Indicative dumps--SPA (USERSPA) followed by SPAEXT (no SYCTTBLs except that for failing thread)

- User storage list also snapped for user-generated indicative dumps

- New TRAP program to trap Intercomm pools destruction

- Unique codes for ISKs within a module

- More informative data in IJKTRACE (WQE trace) report

- IJKTRACE - free queue elements - print only last 200 entries (user modifiable)

- Thread Dump (RCBs) - print resource owners name

- Thread Dump - flag core resource if partial free occurred

2.8.1   System Reliability and Recovery

Program check recovery has been revised to ensure return to the Subsystem Controller to purge the thread if possible, or if not, to return to the Dispatcher. Runaway thread control processing is also revised for the same purpose. A new program check error message (also printed as second area of all 126 snaps) provides not only the PSW in hexadecimal, but also the Csect name and displacement (in hex) where the program check occurred, the subsystem name (if nonzero thread), and the ISK code (if an ISK caused an OC2). Unique codes assigned to ISKs within a module enable the programmer to use this information to find the ISK description in Messages and Codes and determine the cause without having to debug the dump. The new error message is the second area snapped. System save area acquisition processing revised to ensure all save areas snapped in indicative dumps so that chaining to determine processing path may be accomplished. Abend recovery processing revised to produce a thread dump even if a system cancel occurred under MVS. Also, a processing completed message is issued if log buffers flushed and all files successfully closed (useful to determine log status for restart/recovery, and if VERIFY needed for VSAM files). Abend processing does not use Intercomm pools in case a core clobber caused the abend.

Documentation Changes: Operating Reference Manual
                         Messages and Codes

New External Options: None

Installation: Automatic if modules included (via ICOMLINK) in
                         Intercomm linkedit.

2.8.2   New TRAP Facility

A new Intercomm core pools storage destruction trapping module is provided to replace user coding of FAKEDISP. As released, the module traps all manager and dispatcher entry points, and all calls to COBREENT (for COBOL programs). Additional, or other, entry points may be added by the user (via an internal TRAP macro). TRAP validates the core pool headers and chaining to determine if destruction (overwriting) of a pool block has occurred. If so, STAEEXIT processing is cancelled and an immediate abend (1369) is issued. Internally, TRAP generates a trace table of the last 256 entries to TRAP and provides the name of the called entry, the Csect name (and displacement within the Csect) of the caller, and the callers registers for each entry. The destroyed pool block header address and other debugging information is printed in the dump. The trace table is used to determine the culprit (usually the previous entry). A user exit is provided for user validation of other areas within the Intercomm region, if desired. TRAP processing is controlled by the STRT/STOP system commands (disabled at startup). Although some CPU overhead is necessary when using this facility, the amount of processing delay depends on the number of Intercomm pools defined, the entry points trapped, user additions, etc. This new facility has already proven very worthwhile in the field.

Documentation Changes: Messages and Codes

New External Options: TRAP module, STRT/STOP TRAP processing commands

Installation: Include TRAP and override (CHANGE) trapped entry points in the Intercomm linkedit. Ensure a SYSUDUMP or SYSABEND DD statement is in execution JCL. Code user exit, TRAP new entry points, if desired.

2.8.3   New Debugging Aids

At startup, a table of Csect names and addresses, and entry names and addresses within the Csect, is built for the Intercomm load module, and if defined, for the link pack facility load module LPSPA. This table is used to provide the previously described owner/Csect/entry names for Intercomm debugging aids such as error messages and WQE and RCB table printouts. A new module (IJKWHOIT) may also be called by user programs to determine the Csect (and Entry) name represented by a storage address. Optionally, a subsystem name may be requested if the address of the Subsystem Control Table entry (SYCTTBL) is provided. IJKWHOIT can also determine if an address is within a dynamically loaded or link pack (system) program.

For the WQE trace printout, the expiration time for an element that is/was on the timer queue is provided. Additionally, the Csect name (and displacement) and entry name (if available) for the dispatched entry point is provided for each WQE. The subsystem name and codes are also provided for WQEs which are not on the Free Queue and which represent nonzero threads, as well as for all entries associated with the Subsystem Controller. Thus, recent activity within the system can be easily determined as well as whether a particular subsystem was recently executing, was purged, or is waiting for input. In the resource thread dump, the ACQUIRED BY address has been replaced by the Csect name (and displacement) of the resource owner.

Documentation Changes: Operating Reference Manual

New External Options: None

Installation: Automatic (if new modules IJKCESD and IJKWHOIT
                         included via ICOMLINK generation). If LPSPA is
                         used, a DD statement for the library containing
                         that load module must be added to the execution
                         JCL (ddname LPSPALIB).

2.9 TABLE CODING CHANGES FOR EASIER SYSTEM MAINTENANCE

Coding requirements for a number of system tables are changed and restrictions are eased to provide more flexibility in table definition and maintenance. These enhancements include:

- Revised ENVIRON/SETENV coding; modify released version of SETENV

- Revised INTGLOBE/SETGLOBE coding (&VTAM global set on); modify released version of SETGLOBE, if necessary

- Combining SPALIST (System Parameter Area) macro coding into one member (INTSPA: Csect name SPA) via coding of EXTONLY=BOTH parameter to generate both the SPA and SPAEXT (Csect). PMISPA and SPAEXT are eliminated

- Coding of system subsystem (application program) SYCTTBL definitions in a separate member (INTSCT: Csect name SCT) from the SPA; user SYCTTBL definitions are coded in a COPY member (USRSCTS), thus allowing multiple versions (multiregon/test systems) on different libraries without modifying base table

- Coding of system transaction code definitions (BTVERB macros) in a separate member (BTVRBTB) from the Front End Network Table; coding of user verbs in a COPY member (USRBTVRB)

- Coding of network definition macros (for BTAM, TCAM and/or VTAM Front End) in a user-defined member (Csect)

- Updated BTSAMP table (sample coding for BTAM network macros)

- New VTSAMP table (sample coding for VTAM network macros)

- Revised PMIVERBS for the Edit Control Table (includes all system command definitions); coding of user definitions in a COPY member (USRVERBS)

- Elimination of Reports 2000 through 2003 (reload RCT000 data set; note that block size changed to 1500)

- Revised PMIFILET (for new RCT000 block size requirement)

- Intercomm storage pool macro (ICOMPOOL) permits pool sizes up to 256K

- Pools definition member may be dynamically loaded at startup

- Code MMU definitions for PMISTATB and PMIDEVTB (Back End Terminal Tables)

- Revised DVMODIFY parameters for use in Station Table (3270 alternate buffers)

- Revised LOGCHARS for MMU device definitions (2260 definition added); add definitions for other desired devices (TTY, etc.)

- Revised REENTSBS for subroutine definitions; coding of user SUBMODS additions in a COPY member (USRSUBS)

- Revise user-coded OFTs (Output Utility Reports) for alternate buffer devices, if desired

- More link pack eligible modules (LPSPA/LPINTFC)

- New FAR (File Attribute Record) options: OPEN=VSAM, B37, LSR, VSAMCRS

- Updated SMLEVEL and SMPROF defaults (ASMF); use released versions

- New/revised ICOMLINK parameters (DDQ,SECUR,FETABLE,DYNPOOL) and linkedit generation

Most of these changes have been described in detail in previous sections, and are therefore only summarized here. The revised table definitions are described and illustrated in the documentation changes to:

Operating Reference Manual (especially Chapter 2)

BTAM Terminal Support Guide

SNA Terminal Support Guide

Message Mapping Utilities

Basic System Macros

2.9.1   Reinstallation Considerations

All user-coded tables (in addition to those requiring changes described above) must be reassembled except those defined only via DC statements. However, the MRMCT (multiregion communication) and SECVECT (ESS) tables which must be in the link pack area do not have to be reinstalled (unless desired). User-coded Output Utility OFTs (unless alternate buffer parameters coded) do not have to be reassembled, however, disk resident entries must be reloaded to the RCT000 data set due to the larger block size requirement (unless existing data set record-size already larger than 1500 or only core resident entries used). MMU maps do not have to be reassembled or reloaded (except those with alternate buffer parameters coded). Change/Display Utility file description records do not have to be reassembled or reloaded (DES000).

2.10   NEW/REVISED SYSTEM CONTROL COMMANDS

The following system control commands have been revised or added:

- VTST -   VTAM network status and sense display

- TALY,FE -   VTAM network devices also displayed
  TALY,DA -   display information on currently active threads
  TALY,BE -   current MNCL for each subsystem also displayed
  TALY,SU -   summarizes maximum/current active program threads

- SPLU -   can be used for VTAM logoff (no operands)

- STLN/SPLN - support 2741 and Graphics devices

- STLG/SPLG - support 2741 and Graphics devices

- MMUC -   Message Mapping Utilities control command

- FILE -   ALLOC and DEALL parameters provided for dynamic
                 file allocation/deallocation under MVS (include
                 new module IXFDYALC); FEOV parameter used (instead
                 of CLOSE) for x37 abend protected sequential
                 output files

- FHST -   LSR (VSAM buffer pools) statistics also displayed
                 (if implemented); multiple files per screen
                 displayed; only LSR stats may be requested.
                 STATFILE no longer required unless accumulating
                 statistics across Intercomm executions

- SNAP -   now works under MVS

- ABND -   IJKTLOOP processing cancelled (if implemented)

- SECU -   Extended Security System signon/signoff

- COMM -   Multiregion control extended: STATUS,FE and
                 STATUS,RS displays, SEND parameter added

- LOAD -   under MVS, the CORE parameter may specify up to
                 999K

- LOKR/ULKR - also applies to VTAM LUs

- LOCK/UNLK - applies to any verb in the BTVRBTB

- STRT/STOP - DWSCK and TRAP subparameters added

In addition, all BTAM and VTAM Front End commands, general system
commands, GPSS commands, and the new MMUC command are defined in the
release version of BTVRBTB. The user should ensure that the related
subsystems (for example, GPSS routines) are defined in the installation
INTSCT. Edit Control Table entries (VERB, etc., macros) for all system

commands (LTRC, PAGE/SAVE, SECU, etc.) which require such entries are provided in the release version of PMIVERBS. The released BTVRBTB and PMIVERBS contain COPY statements for USRBTVRB and USRVERBS, respectively, where all user additions should be defined.

See <u>System Control Commands</u> and the <u>Operating Reference Manual</u> for further details.

2.11   GENERAL SYSTEM IMPROVEMENTS

Miscellaneous system improvements include:

- New CHANGER utility to compare (generate change deck) two Assembler Language source members

- Linkedits for off-line utility or batch processing which include BATCHPAK no longer need include the SPAEXT (or PMISPA or INTSPA)

- Intercomm-supplied procedures which execute a linkedit have been changed to eliminate RENT option (eliminate SOC4 under MVS); all Intercomm modules reassembled and linked nonreentrant

- Eliminate double loading of subsystems (subroutines) under OS/MFT and VS1 (include new VS1LOADR module)

- Off-line PMILOAD (PMIEXLD) utility revised to eliminate WTOs and print date and loaded members

- Store/Fetch Dump/Restore/Print utility provided

- Default COREACCT macro pool accounting range changed to 64-4096 (by 64)

- A final System Tuning Statistics report is generated at the end of closedown and abend (STAEEXIT) processing

- The System Tuning Statistics module (INTSTS) is automatically included in the linkedit (requires DD statement for STSLOG in JCL)

- Changes to implement the Extended Security System integrated into system modules: a dummy subsystem ($$$$SECU) provided; RPT02003 changed to RPT00049; INTSEC03 eliminated. ESS data set does not have to be recreated

- Prevent thread time-out during flush from hanging Store/Fetch

- Provide specific volume, CYL or TRK, and secondary extent allocation for MVS in SPINOFF

- Support larger block sizes of 3380 disk packs

- Dynamic linkedit load library (DYNLLIB) protection provided to prevent two Intercomm regions from accessing the same data set.

- System messages cleanup (eliminate duplicate ids, provide more usable information, etc.)

- New (USERLOGE, USRSEREX) and revised (COPYEXIT, SPSNEXIT) user exits

- Obsolete modules eliminated from system release (and microfiche)

- MRS region-id (or job name) added to startup and closedown log records for easier log printout identification

- Provide for execution of LOGINPUT in Test Mode

- Force DISPATCH macro execution to ISK if routine to be dispatched is not in linkedit

- Ensure translation of subsystem log codes when using single region logging

- Clean up possible occurrences of SOC4 program checks (ensure link pack eligibility, prevent unowned subpool area access, etc.)

- Ensure RMINTEG processing correctly detects Intercomm core pool destruction

- Allow more than 1000 files (up to 32767) to be in internal DSCT

- Store/Fetch optimizations: do not search disk for transient string if none added/flushed to disk; correct number of disk blocks searched statistic; flush seldom used maps

- Resource-id for INTENQ and INTDEQ macros may be from 1 to 44 characters (if user-specified); the default is 16

- Allow definition of more than 1300 SYCTTBL macros for INTSCT

- Additional LOGPRINT options: by BMN and/or MMN range; print only message headers or only header and first line of text

- Return codes for Dynamic File Allocation special feature revised and clarified for MVS users

- Standardize library naming conventions via documentation, installation and JCL procedures

- All Intercomm-supplied JCL procedures revised for ease of use and standardization (see Operating Reference Manual-Chapter 2)

- ASMF module updates incorporated (previously provided via zaps)

- All tested Experimental SMs incorporated

2.12   NEW INSTALLATION PROCEDURES

The installation process has been completely redesigned to generate a customized JCL stream, whether for a new or a reinstallation of Intercomm. A sysgen macro, ICOMGEN, has been created which will analyze the user's version of the system global tables and the sysgen macro parameters, and then generate JCL for a series of jobs to perform assemblies, table generation, data set generation, etc., as necessary. Linkedit (via ICOMLINK) control statements and an Intercomm execution procedure is also generated. The user may submit the job stream as is, or first separate it into its components. The macro parameters specify not only the Intercomm facility and special feature installation requirements, but also data for the custom-generated JOB statement, and procedural requirements such as the volser for the Intercomm system pack, library and data set prefix names, the type of sysgen (new/old), etc. The new Intercomm Installation Guide provides a detailed description of preliminary steps, the ICOMGEN macro, and the generated JCL. Documentation references for all special feature installation is also provided. For the new user, starter tables are provided on the release library (SYMREL).

The new installation process is comprised of the following steps:

1) An existing installation must rename existing Intercomm system libraries

2) JCL deck is provided to allocate new system libraries and unload the release tape

3) The JCL member COPYPROX on SYMREL must be executed to copy Intercomm JCL procedures to the system procedure library (several of the procedures are executed by the customized JCL stream)

4) The released versions of SETENV and SETGLOBE must be revised to installation options and placed on the user table library (SYMUSR)

5) For existing installations, the new modifications to system tables described in the preceding sections of this guide must be made and placed on the new SYMUSR, other tables which are not changed mst also be copied to this library

6) Code and assemble the ICOMGEN macro

7) Examine the generated JCL stream for any installation-dependent changes or additions that may be required

8) Execute the JCL stream

9) Modify the generated linkedit control statements to add user modules

10) Linkedit the Intercomm region(s)

11) Modify the generated Intercomm execution JCL procedure to add
     user data sets, etc.

12) Execute the new version of Intercomm

Note: existing installations do not have to recreate special feature
         data sets such as those for ESS, DDQ, MMU, Store/Fetch, Data
         Entry, disk queues, checkpointing, etc. except as otherwise
         noted in this Guide.

Chapter 3

NEW DOCUMENTATION

All of the Intercomm documentation is being updated to correspond to Release 9.0, where applicable. The following manuals will have SPRs or new editions:

- ASMF Users Guide (SPR 223)

- Assembler Language Programmers Guide (SPR 218)

- Basic System Macros (SPR 211)

- BTAM Terminal Support Guide (SPR 217)

- COBOL Programmers Guide -- New Edition

- Concepts and Facilities -- New Edition

- DBMS Users Guide (SPR 214)

- Dynamic Data Queuing Facility (SPR 222)

- Dynamic File Allocation -- New Edition

- Extended Security System (SPR 215)

- File Recovery Users Guide -- New Edition

- Generalized Front End Facility -- New Edition

- Installation Guide -- New Edition

- Messages and Codes -- New Edition

- Message Mapping Utilities (SPR 216)

- Multiregion Support Facility (SPR 213)

- Operating Reference Manual -- New Edition

- Page Facility (SPR 220)

- PL/1 Programmers Guide (SPR 219)

- Planning Guide -- New Edition

- <u>SNA Terminal Support Guide</u> -- New Edition

- <u>Store/Fetch Facility</u> (SPR 210)

- <u>System Control Commands</u> -- New Edition

- <u>TCAM Support Users Guide</u> (SPR 224)

- <u>Technical Information Bulletins</u> --New Edition

- <u>Utilities Users Guide</u> -- New Edition

- <u>User Contributed Library</u> (SPR 221)

Many of these updates will be mailed with the Release 9.0 installation tape. The rest will be published when ready. The SPR to the ASMF manual will be mailed with the first Release 9.0 SM tape. New/revised indexes to the above manuals are being prepared, where necessary.

INTERCOMM MODULES ADDED/REVISED/REWRITTEN FOR RELEASE 9.0

Added:

VS1LOADR	COBDSECT (DSECT)	INTSEC02
VRPDSECT (DSECT)	INTSPA (Sample Table)	SECFILE
IXFVSCRS	INTSCT (Sample Table)	VTSAMP (Sample Table)
IXFDYALC	FENETWRK (Sample Table)	VT01MOD
IXFB37	SFDMPRST	VTAMSTAT
POOLSTRT	TRAP	VTAUTOUP
ICOMFEOF	INTSEC (DSECT)	IJKCESD
USRSEREX	LOGSEC (DSECT)	IJKWHOIT
MMUDDMF	ICP (DSECT)	$$$$SECU
MMUCOMM	SVECT (Macro)	CHANGER
AIDSECTS (DSECT)	SECLOCK (Macro)	COMPRESS (JCL procedure)
INTVRB00	INTSEC00	COMPSYS

Revised/Rewritten/Resequenced:

LOGPUT	BDIAL	RPT00048
PREPROG	MANAGER	RPT00049
COBREENT	SYCT400	RPT00050
IXFCREAT	IJKDSP01	PMIVERBS
CLOSDWN3	PMIDCB	REENTSBS
STARTUP3	IXFCTRL	BTVRBTB
IXFHND01	SUBMODS (Macro)	BTSAMP
REQONDDQ	SPALIST (Macro)	ENVIRON
PMILOAD	ICOMLINK (Macro)	SETENV
PMISNAP1	RPT00038	INTGLOBE
BATCHPAK	RPT00039	SETGLOBE
PMINQDEQ	RPT00043	IJKTRACE
RMPURGE	RPT00045	SPINOFF
BLHIN	RPT00046	STAEEXIT
BLHOT	RPT00047	SPIESNAP
		TDUMP

Note: Many others have changes but were not resequenced. User mods to all modules must be carefully evaluated for applicability and necessity.

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