INTERACTIVE HP-3000 TO IBM HOST COMMUNICATIONS

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INTRODUCTION

Interactive Mainframe Facility (IMF), previously known as Interactive Mainframe Link, has been enhanced with new features and improvements on existing features. The purpose of this paper is to introduce DSN/IMF to new users as well as inform current users of the improvements and new features.

OVERVIEW

IMF is a product that enables an HP 3000 Computer System to emulate a remote IBM 3270 series Cluster Control Unit. In previous releases, IMF only supported Binary Synchronous Communications (BSC). Now IMF also supports 3271 Synchronous Data Link Control (SDLC) as an SNA physcial unit type one. Through IMF, users on an HP 3000 can send data to and receive data from applications on a remote host. A user can access a remote host application either programmatically through IMF Intrinsics or interactively through IMF's Pass Thru Facility.

It is possible to use IMF for data entry and retrieval to a remote host application. These host programs issue write commands which send screens of data to remote terminals and read commands which receive data from remote terminals. The host regulates data transmission, therefore IMF sends and receives data when the host instructs it to do so.

In order to establish communications with a host system, the HP 3000 uses an interface called an Intelligent Network Processor. The INP handles the line protocol and performs many 3270 controller functions. The INP software communicates to the HP 3000 software through HP's internal Communication Subsystem (CS). IMF and the INP together appear to the host like a 3270 Control Unit.

There are four major components in the IMF product. They are the INP, the IMF Intrinsics, Pass Through Mode, and the IMF Manager Program. To understand the product, a user needs to know what these components do and how they interact. These components and their interaction are briefly described below.

IMF provides Intrinsics which users can call from COBOL, FORTRAN, SPL, or BASIC. In most cases, the intrinsics allow a user to tailor his HP 3000 program to fit an existing IBM application. The Intrinsics are easy to use, and they perform functions which include transmitting data, receiving data, reading a screen of data, and locating the 3270 field attribute bytes in a screen of data. An HP 3000 application using the IMF intrinsics appears as an interactive session to an IBM Host.

IMF also provides a Pass Thru Facility, previously called the Inquiry and Development Facility, which allows most HP terminals and printers to interact with a host application without additional programming on the HP 3000. When using the Pass Thru Facility, HP terminals and printers function as 3270 terminals and printers.

The IMF communications line is controlled by its Manager Program. From within this program, a user with OP (System Supervisor) capability can issue commands such as START and STOP to control the IMF subsystem. The Console Operator may also issue commands to control the subsystem.

IMF requires a configuration file for each IMF communications line in operation. This file contains information about the line such as the logical device number of the INP, the control unit number, and a list of the devices configured on the host system. The configuration file also contains a list of users that are allowed to use the communications line. The IMF manager may override the allowed list of users in the configuration file.

ENHANCEMENTS

As mentioned in the overview, IMF now gives the user the option of using either 3271 Synchronous Data Link Control (SDLC) as an SNA physical unit type one or Binary Synchronous Communications (BSC). There are many advantages in using SDLC protocol. SDLC provides better data security because it does more handshaking than BSC protocol. Although BSC lines can be supported in an SNA network, IMF support of SDLC eliminates the need and overhead to maintain BSC lines. SDLC protocol allows different types of SNA devices and systems to use the same multidrop line. Multidrop lines can use higher speeds with SDLC protocol than BSC protocol.

IMF now supports IBM's Conversational Monitor System (CMS). This is an important enhancement since CMS and IBM's Virtual Machine 370 (VM) are widely used.

The first release of IMF had a restriction on the size of a data block that could be received from the host application. This restriction has been removed in the second release for both protocols. A segmentation scheme has been implemented in the BSC driver to segment the incoming host data into 256 byte blocks for processing, and the SDLC protocol sends 256 bytes of data in one frame.

IMF's design has changed to solve two character code problems encountered in the first version. First, the ASCII to EBCDIC translation function has been moved from the INP to the 3000 and now uses MPE's CTRANSLATE Intrinsic. Therefore, users who have special character translations will see those translations in their IMF applications as in all other Data Communications products. Second, eight-bit character codes like Katakana will be easily supportable in the new version. Eight-bit character code support is now possible because IMF no longer uses the high order bit to denote a 3270 field attribute byte.

The receive timer for the RECV3270 Intrinsic has been expanded to cover the TRAN3270 Intrinsic so that a user may detect that the host has stopped communicating without needing to use no-wait I/O.

The IMF monitor now identifies the communications line number in its messages. This is essential for installations where more than one IMF line is in use at once.

The IMF Manager's DISPLAY ALL command has been improved. A message has been added to indicate whether the host is communicating or not. Also, if CS Trace is running the name of the currently opened trace file is displayed.

The default name on a CSTRACE file name has been changed to IMFTRXXX.PUB.SYS where XXX is the ldev of the pseudo-device.

When the Pass Thru Facility is terminated on a 2640B terminal, it will print a reminder message on the screen to un-latch the block mode key.

A new Intrinsic, PRINT3270, has been added to IMF. This Intrinsic will enable the user to get a hardcopy snapshot of his screen image. The screen can be printed in two different formats. One format shows attribute characters and nulls and is very useful for debug purposes. The other format prints the screen as it would be viewed on a terminal and thus provides some

of the features of a local copy. A user interface to this Intrinsic will allow it to be called from the Pass Thru Facility.

There has been a change to the IMF philosophy when the host stops communicating. Basically, the IMF Subsystem will remain active if the host stops communicating and will not have to be restarted when the host starts communicating again. Pass Thru terminals, however, will exit the Pass Thru Facility and return to MPE. Users might have to re-establish their sessions with the host since IMF cannot maintain them on the host side. During the time that the host is down, any TRANS3270 or RECV3270 intrinsic calls will receive an error message stating that the host is not communicating. It is important to remember that IMF cannot distinguish when a host subsystem or application terminates if the access method continues to send control sequences through the phone line.

A data stream mode has been added to IMF to provide a means of file transfer between the host and the 3000. This mode will allow an application program to obtain the untranslated data stream from the host. This mode is only allowed when using SDLC protocol. Two new intrinsics, READSTREAM and WRITESTREAM, have been added for using this mode. The data stream is kept in the same format as the host sent it in and no screen image is produced. Hence, a user in data stream mode is not allowed to use any of the IMF Intrinsics which access an internal screen image. Likewise, a user who is not in data stream mode may not access the READSTREAM and WRITESTREAM Intrinsics as the data stream is not maintained.

CONCLUSION

For HP 3000 users who need to access data on a remote IBM mainframe, IMF is an excellent solution. In addition to 3270 emulation, IMF enables users to write HP 3000 applications that can communicate with host applications. The new functions and enhanced features provide increased functionality and extend IMF's useability in SNA host environments.