IBM Technical Newsletter

This Newsletter No. GN34-0678
Date December 19, 1980
Base Publication No. GC34-0217
File No. S1-20
Previous Newsletters None

IBM Series/1
Series/1 - System/370 Channel Attach Program
General Information Manual
Program Number 5719-CA1

This Technical Newsletter provides replacement pages for the subject publication. Pages to be inserted and/or removed are:

v, vi
1-1, 1-2
4-1, 4-2

A technical change to the text or to an illustration is indicated by a vertical line to the left of the change.

Summary of Amendments

Changes for the Realtime Programming System Version 5 have been incorporated.

Note. Please file this cover letter at the back of the manual to provide a record of changes.

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Printed in U.S.A.

Preface

This document introduces the IBM Series/1–System/370 Channel Attach Program (hereafter called the Channel Attach program), the IBM 4993 Model 1 Series/1–System/370 Termination Enclosure, and the IBM Series/1–System/370 Channel Attachment Feature #1200, (hereafter called the Channel Attach device). Your personnel should be familiar with application programming, publications, and terminology for the Series/1 and with the hardware, application programming, and the host support provided for the System/370. Your personnel must understand the logic of programming support in sufficient detail to determine system, program, and hardware interactions when using the Channel Attach program.

Organization of This Document

This document contains four chapters:

- Chapter 1 discusses the Channel Attach device, the Channel Attach program, and the program serviceability aids.
- Chapter 2 discusses the interface between the Series/1 and Channel Attach program and device.
- Chapter 3 discusses the interface between the System/370 and the Channel Attach program.
- Chapter 4 discusses other considerations when using the Channel Attach program.

Related Publications

You should be familiar with the following publications:

IBM Series/1-System/370 Channel Attach Program Reference
IBM Series/1-System/370 Channel Attachment Feature and 4993 Model 1 Series/1-System/370 Termination Enclosure Description
IBM Series/1 Realtime Programming System (for Versions 3, 4, and 5):

Introduction
Supervisor User's Guide
Data Management User's Guide
Macro Reference
Generation and Installation Procedures (for Versions 3 and 4)
Standard System Installation Guide (Version 5)
System Customization Guide (Version 5)
Messages and Codes
Operator Commands and Utilities
Communications User's Guide
Problem Determination
Control Blocks

You should also be familiar with the following IBM System/370 publications:

Principles of Operation, GA22-7000
Information Display System Component Description, GA27-2749
OS/VS BTAM (OS/VS1 Release 6, OS/VS2 Release 3), GC27-6980

OS/VS System Generation Introduction, GC26-3790
OS/VS2 System Generation Reference (Release 3.7), GC26-3792

Chapter 1. Introduction

The IBM Series/1–System/370 Channel Attach Program, hereafter referred to as the Channel Attach program, provides support to your Series/1 Realtime Programming System* in using the Channel Attach device to communicate across a System/370 channel. This support provides the ability to transfer data between an application program operating on a Series/1 under the Realtime Programming System and with an application program on a System/370 operating under OS/VS1 with basic telecommunications access method (BTAM) or OS/VS2 (SVS or MVS) with BTAM for an IBM 3272 Control Unit (see Figure 1-1).

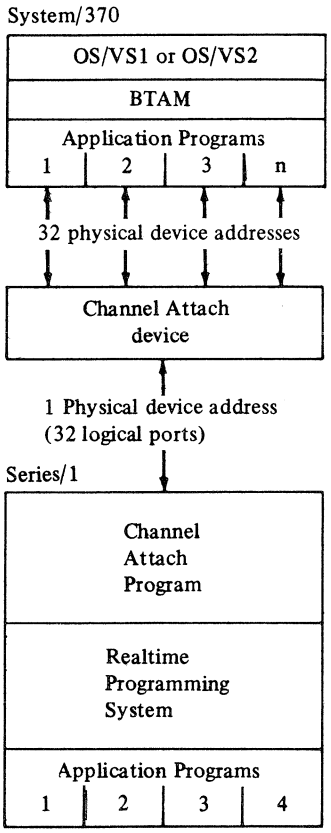

Figure 1-1. A Series/1–System/370 Channel Attach System

The Channel Attach program support:

- Establishes, controls, and terminates access between Series/1 application programs and the Channel Attach device.
- Manages input/output transfers between Series/1 application programs and the Channel Attach device.
- Communicates with the System/370 over 32 ports (device addresses) per Channel Attach device.

* All references to the Realtime Programming System in this document are for Version 3 modification 2 and later modifications, Version 4 modification 2 and later modifications, and Version 5 all modifications.

- Performs error logging.
- Traces Series/1 input/output commands and attention interrupts from the Channel Attach device using the Realtime Programming System trace facilities.

  Note: Channel Attach program trace records are not written to the operator station.

- Handles interrupts from the Channel Attach device.
- Supports transmission of transparent data.

If you use the physical level of access (READ/WRITE macros), the Channel Attach program:

- Manages data ports to avoid conflict between Series/1 users.
- Performs error recovery and retry wherever possible.

If you use the basic level of access (EXIO macro), the Channel Attach program:

- Provides condition codes to the application program of operate input/output (OIO) commands and interrupts.
- Posts the EXIO application program when an attention interrupt occurs and supplies the interrupt information byte and attachment status word.

Channel Attach Hardware

The Channel Attach hardware (hereafter referred to as the Channel Attach device) consists of:

- IBM 4993 Model 1 Series/1–System/370 Termination Enclosure which provides physical support, mechanical connection, and electrical termination for the System/370 channel interface cables.
- IBM Series/1–System/370 Channel Attachment Feature #1200 which provides channel-to-channel communications between a Series/1 and a System/370. It acts as a control unit with 32 device addresses at the System/370 end and with one channel (device) address at the Series/1 end.

Each Channel Attach device must be contained in a separate rack. The Channel Attach device is connected to a channel of each system and appears as an input/output device to its respective processor. Operations are controlled by input/output commands directed to the Channel Attach device by one or both processors.

When the Channel Attach device is installed, it appears as a single cycle steal device to the Series/1 processor. To the System/370 it appears as one control unit with 32 input/output device addresses. The System/370 channel must be either a selector channel or a block multiplexer channel.

The Channel Attach device connects a System/370 selector or block multiplexer channel with the input/output interface of a Series/1 processor. The Channel Attach device operates in a half-duplex mode to transfer data under joint consent between System/370 and Series/1 application programs. The number of attachments connected to the Series/1 or System/370 is determined by the addressing and physical limitations of the respective systems.

Figure 1-2 shows a configuration of four Series/1 processors, five Channel Attach devices, and two System/370 processors. The Series/1 labeled as *1* communicates through one Channel Attach device only with a channel on the System/370 labeled *A*. The Series/1 labeled *2* communicates through one Channel Attach device with one channel of the System/370 labeled *A* and through another Channel Attach device with one channel of the System/370 labeled *B*. The Series/1 labeled *3* communicates through one Channel Attach device with a System/370 channel which also communicates with the Channel

Chapter 4. Other Considerations

System Generation

For the Series/1

Information you supply during the Series/1 system generation question-and-answer session tailors the Realtime Programming System to include the Channel Attach program. The question-and-answer session requests data about:

- Automatic device start at initial program load
- Device definition
- Device handler routines

For the System/370

Stage 1 input/output system generation for the System/370 generates the Channel Attach device as a cluster of 32 device addresses (ports).

Error Logging

Error logging for the Channel Attach program uses the Realtime Programming System LOG macro to generate an error record and write it to the error log.

You can print the error log using the Series/1 print utility.

Attention Interrupts

Attention interrupts are handled immediately by the Channel Attach program in order to provide rapid response to System/370 requests, thus avoiding timeouts. If you use EXIO, you must respond within 480 milliseconds.

Tracing

Problems involving input/output operations issued from the Series/1 and attention interrupts from the System/370 can be analyzed using the Realtime Programming System trace log. Trace is started as for any other Realtime Programming System device. However, trace messages are not written to the system console.

Messages

Only one Realtime Programming System execution-time message is used for the Channel Attach program:

CKP05A pp INTERVENTION REQUIRED ON dev name

Realtime Programming System assembly-time messages flag errors or warnings when assembling data management macros.

See the *Messages and Codes* manual for explanation of execution-time and assembly-time messages.

Return Codes

Return codes are described in the *Messages and Codes* manual. Return codes added to the Realtime Programming System return codes for the Channel Attach program can be found in Chapter 4 of the *Channel Attach Program Reference* publication.

Security and Privacy

The Channel Attach program runs under the Realtime Programming System. Therefore, all the security available to the Realtime Programming System is available to the Channel Attach program. The Channel Attach program enforces a joint consent message protocol, where the control of data transfer requires the consent of one side of the channel before data is passed from the other side.