

CONTROL DATA® 6400/6600 COMPUTER SYSTEMS
EXPORT/IMPORT 8231 Reference Manual



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INTRODUCTION

6400/6600 EXPORT/IMPORT 8231 is a system of programs which provides multi-access to a central CONTROL DATA[®] 6400 or 6600 computer system from remotely located terminal stations. Users at remote sites may submit jobs under the EXPORT/IMPORT system and may enter input to the system. They will receive output in the same manner in which the user would receive it at the central computer. An operator at any remote terminal has extensive access to the central processor, almost as if he actually were working at the site of the central processor. In addition, off-line utility operations are available with EXPORT/IMPORT.

During operation, parts of EXPORT/IMPORT reside, not only in different portions of the central computer system, but also in each remote station. Three basic elements comprise the system:

IMPORT, the remote computer resident program

EXPORT, the peripheral processor resident program

SCOPE, the central computer operating system

A familiarity with SCOPE is a prerequisite for the use of this manual.

1.1 SYSTEM COMPONENTS

6400/6600 EXPORT/IMPORT 8231 runs under the SCOPE Version 3.0 operating system on the 6400 and 6600 CONTROL DATA computer systems. It is composed of two separate but dependent programs:

The Executive Processor of Remote Tasks (EXPORT) resides in each peripheral processor† (PP) assigned to remote communications by the central facility.

The Input/Output Monitor for Processing of Remote Tasks (IMPORT) resides in each remote facility.

Features of SCOPE for remote job processing supplement these two programs.

1.1.1 EXPORT

EXPORT consists of a resident program with two main overlays: one for handling communications and another for processing data. In addition, several SCOPE system overlays are called as needed.

EXPORT communicates with transient SCOPE input and output routines in another PP through central memory buffers and flags. EXPORT communicates with IMPORT through the data communications facility. With the data received from IMPORT, EXPORT prepares input files for processing under SCOPE; and EXPORT intercepts output files for transmission back to IMPORT. Operator communication is accomplished through the system display console.

1.1.2 IMPORT

IMPORT is a monitor program which resides in an 8231 remote computer terminal. IMPORT communicates with EXPORT over the data communications facility. It is interrupt controlled for transmitting data to EXPORT. Operator communication is carried out through the on-line typewriter attached to the 8231. Utility operations may be performed when IMPORT is not communicating with EXPORT.

† In a 6400 or 6600 computer, ten peripheral processors operate independently and simultaneously as stored program computers.

**1.2
SYSTEM
DEPENDENCIES**

Since EXPORT/IMPORT runs under the SCOPE operating system, any modifications to or restrictions on SCOPE must be made with full consideration of the requirements that EXPORT places on the system. Efficient use by EXPORT of the data communications facility is dependent upon consistently good disk access and upon the availability of transient PP's.

The basic minimum hardware configuration for SCOPE also applies to EXPORT/IMPORT. In addition, certain other equipment is required to provide the data communications facility and its interface with access to the central computer and the remote 8231 computer terminal.

2.1 CENTRAL COMPUTER

At least one 6675 data set controller (DSC) model B or D is required on a dedicated 6400 or 6600 data channel. A 6675 DSC provides adapters for the 301-B DATA PHONE[†] data sets and connects directly to a data channel. More than one 6675 DSC may be attached to the computer system; however, each DSC must be on a separate channel. Model B of the 6675 DSC connects one or two 301-B data sets; model D connects one to four 301-B data sets.

2.2 REMOTE COMPUTER TERMINAL

The remote computer terminal consists of an 8231 system with the following components:

- Computer (with 8K memory)
- On-line I/O typewriter
- Data channel converter
- Card reader controller (buffered)
- Card reader (1200 cards per minute)
- Line printer controller (buffered)
- Line printer (1000 lines per minute)
- Data set controller

[†]A registered trademark of AT & T and the Bell System.

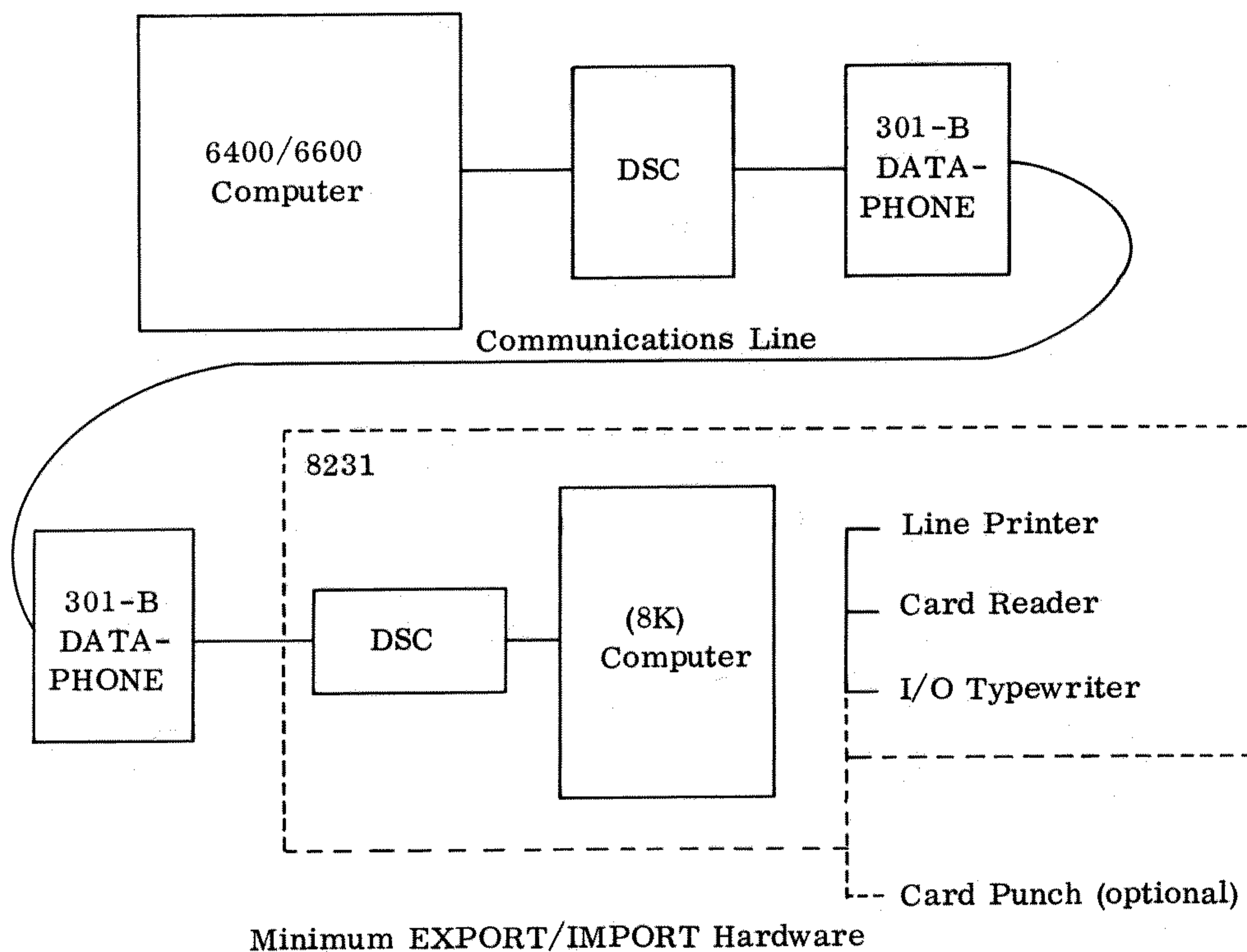
The following optional equipment may be attached to the 8231 system:

- 3446 Card punch controller
- 415 Card punch (250 cards per minute)
- 8073 Paper tape perforator
- 8074 Paper tape reader

2.3 COMMUNICATIONS EQUIPMENT

A 301-B DATA PHONE data set, which operates at a nominal data rate of 40,800 bits per second, is the standard communications MODEM (modulator demodulator) used with EXPORT/IMPORT. This data set provides the interface between the DSC and the communications line.

The communications line may be either a Telpak-A[†] facility, which is available from a telephone company, or a private coaxial cable. Transmission is half duplex, except for the SYNC word acknowledgment which is provided in full duplex mode.



[†] A registered trademark of AT & T and the Bell System.

3.1 SIMPLIFIED JOB FLOW

A simplified description of the overall job flow for both input and output (with respect to only one terminal) follows. General input/output functions are identical to the read and output packages under SCOPE.

INITIALIZATION

- Load IMPORT program deck.
- Prepare to read cards.
- Call EXPORT to a control point.

INPUT FROM CARDS

- Cards are read by IMPORT.
- Trailing blanks are deleted.
- Internal BCD is converted to display code.
- Data is packed into buffers equal in size to 64 central memory words (one disk sector).
- Full buffers and end-of-record (EOR) or end-of-file (EOF) indicators are transmitted to EXPORT.
- EXPORT requests SCOPE to write data from buffers to disk.
- At EOF, the file is set to INPUT and released to SCOPE.

OUTPUT TO PRINTER AND PUNCH

- File Name Table/File Status Table (FNT/FST) is scanned by EXPORT for remote OUTPUT files.
- Sectors are read by SCOPE to central memory (CM)
- Output is transmitted to IMPORT in one-sector blocks.
- IMPORT deblocks print lines and punch cards.
- Lines are printed with carriage control.
- Cards are punched.

3.2

SCOPE INTERFACE

Before EXPORT/IMPORT can be used, the following initialization activities must be completed:

- Entries should be made to the Equipment Status Table (EST) for each 6675 DSC attached to the computer system.
- Care must be taken to determine the correct equipment number and channel number for each 6675 and the number of units attached to it.
- It may be desirable to reassemble EXPORT to make adjustments for 32K systems or for other core management problems, since the number of disk sectors buffered into central memory is a system parameter.

3.2.1

INITIALIZATION OF EXPORT

The EXPORT initialization program is called manually by operator request. The operator enters: n. EXPORT which calls the routine to control point n.

3.2.2

JOB PROCESSING

The files associated with remote jobs are identified by the remote bit (highest order bit) of the 12-bit disposition code (dc) in the FNT/FST. Normally, this bit is not interpreted until the job has been processed completely. At that time, print and punch files are ignored by SCOPE if the remote bit is set, and the disposition is handled by EXPORT. The remaining bits of the dc field are used by EXPORT to identify the file for printing or punching. In all other respects, the job is processed identically to non-remote jobs.

3.3

TERMINATION OF EXPORT

Each terminal notifies EXPORT when communication is finished. When all lines become inactive, EXPORT enters PP recall at its control point. The operator may drop EXPORT if he wishes to free the control point.

3.4

JOB FLOW DIAGRAMS

The following diagrams illustrate the flow of data and control from the beginning to the end of a job. The diagrams assume that EXPORT has been assigned and loaded into a peripheral processor at the central site and that IMPORT has been loaded into the remote facility.

