

OS4 TECHNICAL BULLETIN

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REVISION HISTORY

<u>Revision</u>	<u>Date</u>	<u>Comments</u>
B1	Nov. 1978	Original Issue.
C0	Dec. 1978	OS4 C0 Engineering Release.
C1	Feb. 1979	OS4 C1 Production Release.
D0	Aug. 1979	OS4 D0 Production Release.
E0	Mar. 1980	OS4 E0 Production Release.
E4	June 1980	OS4 E4 Production Release. Information in the manual corresponds to the software released at revision level E4.

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SUPPLEMENT TO OS4 TECHNICAL BULLETIN (90-93460-03)

The following addenda to the OS4 Technical Bulletin apply to the E400 Release:

1. The magnetic tape functions in MTEX are intended to be used mainly for backing up files from disk or diskette. They should not be used for copying records directly onto tape from unit record devices.
2. To support line printers which store print lines internally and print them only upon receipt of a line feed character, the printer CLOSE function has been modified to automatically output a line feed character.
3. The IOSDIBCIB.ASM and OS4CONFIG.ASM files have been updated to correspond with their descriptions in the OS4 User's Manual, with the following exception:

While the standard DIB for a line printer assumes 81 characters per line, 57 lines per page and automatic line feed, the release versions of OS::SYS and OS4CONFIG.ASM specify a line printer with 81 characters per line, 39 lines per page, and no auto-line feed. This facilitates the bootstrap process for users with printers that require a line feed in the character stream.

4. The file IOSDIBCIB.ASM has been moved from the OS4 System Generation diskette to the OS4/Utilities diskette No. 2; also, the file IOSD.MAC has been deleted from the OS4 System Generation diskette, but is available on the OS4/Utilities diskette No. 1. These changes were made to make more space on the System Generation diskette, to guarantee sufficient room when doing a diskette-only sysgen.

This release of OS4 incorporates a number of modifications to the system. This bulletin summarizes those modifications.

SECTION 1. CONTENTS OF STANDARD MEDIA

The complete OS4 system consists of the following three subsystems:

- RTX4/IOS4/SFM4
- OS4 and utilities
- Multi-Terminal Editor (MULTED)

These three subsystems must be ordered as separate items. Together they comprise seven diskettes; the contents of these diskettes have changed since the last OS4 release. The diskette contents are:

- RTX4/IOS4/SFM4:

RTX4 Libraries Diskette, #00-93410-01E100

RTX4 library	RTX.LIB
RTX4 library (check version)	RTXD.LIB
IOS4 library	IOS.LIB
IOS4 library (check version)	IOSD.LIB
SFM4 library	SFM.LIB
SFM4 library (check version)	SFMD.LIB
Instruction Emulator library	EMLTR.LIB
Analog Handler library	ADA.LIB
Extended I/O Interface library	EII.LIB
Mini Debug 4 Object file	DEBUGM.OBJ
Mini Debug 4 Binary file	DEBUGM.BIN
Standard Debug 4 Object file	DEBUGS.OBJ
Standard Debug 4 Binary file	DEBUGS.BIN
Extended Debug 4 Object file	DEBUGX.OBJ
Extended Debug 4 Binary file	DEBUGX.BIN

RTX4 Macros Diskette, #00-93420-04E100

General Purpose Macro file	GEN.MAC
RTX4 User Macro file	RTX.MAC
RTX4 Development Macro file	RTXD.MAC
IOS4 User Macro file	IOS.MAC
IOS4 Development Macro file	IOSD.MAC
SFM4 User Macro file	SFM.MAC
SFM4 Development Macro file	SFMD.MAC
Analog Handler Macro file	ADA.MAC
RTX4 Demo Program Source file	RTXDEMO.ASM
RTX4 Demo Program DO file	RTXDEMO.JCL
SFM4 Demo Program Source file	SFMDemo.ASM
SFM4 DEMO Program DO file	SFMDemo.JCL
BiSync Pico Handler Macro file	BSC.MAC

• OS4 and Utilities:

OS4/Utils Diskette #1, #00-93460-01E200

OS4 Memory Resident System	OS:::SYS
OS4 Executive	EXEC:::SYS
Mag Tape Executive	MTEX:::SYS
Source Editor	EDIT.SYS
Macro Assembler	MACRO.SYS
Object Program Patch Utility	PATCH.SYS
OS4-Linked Extended Debug	DEBUG.SYS
Label Utility	LABEL.SYS
General Purpose Macro file	GEN.MAC
RTX4 User Macro file	RTX.MAC
IOS4 User Macro file	IOS.MAC
IOS4 Development Macro File	IOSD.MAC
SFM4 User Macro file	SFM.MAC
OS4 Macro file	OS4.MAC

OS4/Utils Diskette #2, #00-93460-05E200

Executive	EXEC:::SYS
Line Editor	OLE.SYS
Concordance	CNC.SYS
Disk Conversion Utility	D2D.SYS
Help Utility	HELP.SYS
Help Help file	HELP.HLP
Commands Help File	COMMANDS.HLP
Downline Load Utility	DOWNLOAD.SYS
ROM Generation Utility	ROMGEN.SYS
ISOLITE ROM Formatter	AUTOGEN.SYS
Object Code Listing Utility	TCDUMP.SYS
Sort Utility	SORT.SYS
Merge Utility	MERGE.SYS
COBOL Sort Utility	COBOLSORT.SYS
Sort/Merge Library File	SORT.LIB
Sort/Merge Macros	SORT.MAC

OS4 System Generation Diskette, #00-93460-02E200

Bootstrap Relocator Module	BOOT3.BIN
Sysgen Root Source file	OS4CONFIG.ASM
Sysgen Assembly DO file	OS4GEN.JCL
Sysgen Link DO file	OS4GENLINK.JCL
Dual Floppy Sysgen Link DO file	OS4GENFLINK.JCL
Primary System library	OS4SYS.LIB
Auxiliary System library	OS4AUX.LIB
IOS4 Development Macro file	IOSD.MAC
IOS DIB/CIB Source	IOSDIBCIB.ASM

OS4 Linker Diskette, #00-93460-04E2.00
 OS4 Executive
 Linker/OS4 Interface
 Linker overlays

EXEC:::SYS
 LINK.SYS
 OS4NEWLINK.POB
 LNKPASS1.POB
 LNKPASS2.POB
 LNKPASS3.POB
 LNKNSMAP.POB
 LNKPASS3S.POB
 LNKSMAP.POB
 LNKXREF.POB
 LNKDEBUG.POB
 OVMERGE.SYS
 OS4.LIB
 ROMINIT.OBJ

Overlay File Merge Utility
 OS4 System Library
 ROM-to-RAM Loader Utility
 • Multi-Terminal Editor (MULTED):

MULTED System Diskette, #00-93470-01E100
 Sysgen Root Source file
 MULTED Interface
 MULTED System Module
 Batch Processor Module
 Editor Module
 Sysgen Assembly JCL
 Sysgen LINK JCL

MTECONFIG.ASM
 OSMTE.SYS
 MULTED.SYS
 BATCH.SYS
 MTE.SYS
 MTEGEN.JCL
 MTEGENLINK.JCL

SECTION 2. RTX4/IOS4/SFM MODIFICATIONS

1. A large number of problems have been fixed in this revision; one of the more significant areas updated was the IOS4 character handler, which controls I/O to Teletype, CRT, paper tape and line printer. In general, these corrections were made to allow the handler to operate in accordance with the functional description in the Input/Output Subsystem (IOS4) Reference Manual, especially in the area of input character editing. A noticeable difference is in the operation of the handler with regard to the input sequence of backspace followed by carriage return. In past versions, this sequence would return a character count of zero. It now causes an automatic request for a new input.
2. The RTX4, IOS4, and SFM library modules have been separated into ROMable and non-ROMable segments and now correspond to the segment names RTX:, IOS:, and SFM:, and TABLE:. RTX:, IOS:, and SFM: can be placed in ROM; TABLE: must be placed in RAM.
3. An additional IOS4 service, called I:OVL, has been included in IOS.LIB. It is used in conjunction with the overlay feature of the linker and the OVMERGE.SYS utility, both described in the OS4 User's Manual.

4. The IOS4 library has also been changed with respect to the number of standard DIBs and CIBs which are now available to user programs at link-time. The source file IOSDIBCIB.ASM (contained on the OS4 Sysgen Diskette F46002) can be listed by the user to establish exactly how these tables are configured.

The DIB:ST macro, originally described in the OS4 System User's Manual and inadvertently omitted in the new issue, now has a companion macro, the CIB:ST macro. These two macros enable a user program to call up the standard device tables at link-time. Both macros are defined in IOSD.MAC macro file, and their descriptions are as follows:-

DIB:ST Macro

This macro causes a Standard IOS4 DIB to be loaded (at LINK-time) from the IOS4 library.

Format: DIB:ST device

where:

device is the device name contained in the DIB to be loaded; must be one of the names given below. DIBs for devices not listed must be created using the appropriate device macro, e.g. DIB:MT.

TK00	TTY keyboard and printer
TY00	TTY
TP00	TTY paper tape punch
TR00	TTY paper tape reader
TV00	CRT
LP00	line printer (80 col. 57 lines/page, auto-linefeed)
CR00	card reader
PP00	high-speed paper tape punch
PR00	high-speed paper tape reader
DF00	floppy disk unit 0
DF01	floppy disk unit 1
DF02	floppy disk unit 2
DF03	floppy disk unit 3
DM00	medium-capacity 5mb. disk, fixed platter
DM01	medium-capacity 5mb. disk, removable platter
DM02	as DM00 but 10mb. disk and 2nd. unit
DM03	as DM02 but removable platter
DH00	high-capacity disk, 40mb., unit 0
DH01	high-capacity disk, 80mb., unit 1
DH02	high-capacity disk, 150mb., unit 2
DH03	high-capacity disk, 300mb., unit 3

CIB:ST Macro

This macro causes a Standard IOS4 CIB to be loaded (at LINK-time) from the IOS4 library.

Format: CIB:ST $\left\{ \begin{array}{l} \text{DMO} \\ \text{DHO} \end{array} \right\}$

where:

DMO refers to a medium-capacity disk with
device address :14 (:A0)

DHO refers to a high-capacity disk with
device address :15 (:A8)

If a non-standard DM or DH DIB is created (by means of the DIB:DM/DIB:DH macros), rather than create a new CIB when the standard one matches the configuration, a CIB:ST macro call should appear before the DIB macro call(s) in the user program.

If the standard CIB is incompatible with the hardware configuration, a CIB:DM or CIB:DH macro call should be used.

5. The IOSD.MAC file has been modified to include the TVDIBCIB macro definition. This macro enables a user to generate a system with TV devices.

Format: TVDIBCIB pun,channel no.

where:

pun refers to the physical unit name (e.g. TV01,TV02)

channel no. refers to the I/O Distributor channel (e.g.0,1)

Note: Do not create a DIB/CIB pair for TV00 using this macro. Instead, use the DIB:ST macro or specify D:TV00 in your UAT table.

SECTION 3. OS4 MODIFICATIONS

1. An alternative executive module, called MTEX::SYS, has been included in this release. This file is a superset of EXEC::SYS, and supports commands to the Magnetic Tape Intelligent Cable (MTIC). A full description may be found in the OS4 System User's Manual.
2. A Sort/Merge utility has been added to OS4. It allows sorting operations either by interactive commands, or via assembly language, FORTRAN, or COBOL calling sequences. It is described in its own manual, SORT/MERGE4 Reference Manual, included in the OS4 package.
3. Two additional utilities to support ROM development have been included. These are described in the OS4 ROM Utilities Reference Manual, also included in the OS4 package. A ROM-to-RAM Loader (ROMINIT) is also supplied (in object code format) for users to incorporate with their ROM-based programs.
4. The VIEW command will accept multiple input requests, separated by commas.
5. The E:ISM service reads a symbol from the command buffer into a parameter block, generated via either the ISM:PL macro or the GEN:PL macro. This service has been revised so that it accepts a 5 digit decimal number. However, an error is not generated when the number used exceeds the largest 16 bit value (32767).
6. The OVMERGE Utility, as described in the OS4 System User's Manual, converts binary files, output by the LINK Editor, into absolute memory image. The Utility command line syntax has been changed so that the plus sign (not the comma) is accepted to specify the optional input medium (paragraph 5.7.1). Disregard all references to the use of commas on the command line when reading the utility usage description.

The Program Execution Sequence statement is as follows:

```
OVMERGE [medium1=]medium2[(options)][+medium3[(options)]]...
```

7. Two options have been added to the OVMERGE Utility (refer to paragraph 5.7.2). The options are as follows:

- OVERLAYFILE

This option indicates that the filename preceding this option, and all following filenames, are the names of the actual overlay files.

- COMMANDFILE

This option indicates that the filename preceding the option, and all following filenames, are the names of the overlay command files containing the actual overlay files. (Default)

8. A VERIFY feature has been added to EXEC::.SYS to enable two files to be compared.
As with the COPY command, parameter options are available to specify the mode in which the files are to be read.
9. The LABEL utility has been enhanced to allow the user to specify the maximum number of files that will be allowed on a labelled disk. Refer to the OS4 System User's Manual for details of the command syntax.
10. The E:ICH service has been modified to translate lower case letters into upper case. As a result OS4 commands, and utilities which use the E:ICH service, will now accept lower case input. The lower and upper case letters are not differentiated.
11. During OS4 or MULTED system generation (SYSGEN) using the NM4 Instruction Emulator, a warning may appear during linking which describes multiply-defined emulator modules. This warning should be ignored.
12. The internal stack for DO file nesting has been moved into the OS4CONFIG.ASM file to allow the user to change the nesting level depth. This affects compatibility between the OS::.SYS and EXEC::.SYS files. Thus, the user must NOT mix files of E and D revision levels. Always use the E200 EXEC::.SYS file with the E100 OS::.SYS file.
13. The Downline Load Utility (see the Downline Load Utility Reference Manual) has been added to the OS4 package. This utility enables binary program files to be transmitted from any NAKED MINI 4 system to a SCOUT system via a CRT/Modem Pico or the Asynchronous Multiplexer.

SECTION 4

FAULT IN OS4 MONITOR SERVICES

A fault has been detected in the E:RCI service since the E200 OS4 package was released. There follows a description of the fault symptoms and a method for overcoming this fault. The OS::.SYS file supplied on the OS4 Utility Diskette No.1 has not been patched.

Symptoms

If a user program calls the E:RCI Service, and supplies its own buffer as an alternative to the CI buffer then all subsequent executions of job files (DO command) will produce garbage echoing of the JCL file commands. This fault existed in a similar manner in C1 and D1 versions of OS4 but only while the 'culprit' user program was being executed from a Job file. ROMGEN supplies its own buffer to E:RCI and will therefore produce the symptoms as described above. Also, if SL is assigned to a different device from OC, all SL echoing of commands will be meaningless.



Remedy

Patch OS::.SYS as follows:

1. Find the address of RCI by inspecting location :134.
2. Then do:

```
PATCH OS::.SYS
R0  (:134)+5
AD  3141,20,86BD,AFD,86C3,906
END
```

The unmodified contents of RCI+:5 to RCI+:A are respectively:

86BF,906,3143,A6C4,A6BB,900

The alternative to patching is to re-Autoload OS::.SYS after using any program which supplies its own buffer to E:RCI.