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September 13, 1991

Dear iPSC® System Update Customer:

This package contains update 9/16 of Release 3.3 to the iPSC system software. With this software installed on your iPSC® Supercomputer[1], your system is ready for use. Please read through the documentation and distribute it to anyone intending to use the system.

The Release 3.3 system software runs on iPSC®/2 (with Intel386™-microprocessor-based CX nodes) and iPSC®/860 (with i860™-microprocessor-based RX nodes or with a combination of CX and RX nodes) systems.

Before using your iPSC System:

- **Read this letter completely.**
- **Verify the contents of this package.**
- **Read the *iPSC®/2* and *iPSC®/860 Release 3.3 Update 9/16 Software Product Release Notes.***

Package Contents

Your iPSC system software update 9/16 package is shipped in one box. Please verify that it includes the following items:

Media

iPSC®/2 System Software Release 3.3 Update 9/16 cartridge tape (part number 312216-001)

R3.3 Update 9/16 Documentation

iPSC®/2 and iPSC®/860 Release 3.3 Update 9/16 Software Product Release Notes (part number 312218)

If items are missing, or if you have any questions, contact Intel Supercomputer Systems Division immediately. Refer to "Comments and Assistance" for information about how to contact Intel Supercomputer Systems Division.

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1. The terms "iPSC Supercomputer" and "iPSC system" refer to any of the following SSD products:iPSC®/2, iPSC®/2S, iPSC®/860, and iPSC®/860S.

What is in This Update?

Release 3.3 Update 9/16 contains iPSC system software for both iPSC/2 and iPSC/860 systems. The iPSC Release 3.3 system software update is an interim release and provides fixes to improve system stability.

New Documentation

Refer to the *iPSC®/2 and iPSC®/860 Release 3.3 Update 9/16 Software Product Release Notes.*

Installation

To install iPSC® System Release 3.3 Update 9/16, refer to the installation instructions in the *iPSC®/2 and iPSC®/860 Release 3.3 Update 9/16 Software Product Release Notes.*

NOTE

Adding or removing any boards or components from your iPSC system can damage the system and may invalidate your warranty. Please contact Intel Supercomputer Systems Division Customer Support for assistance in answering your questions.

Comments and Assistance

Intel Supercomputer Systems Division is eager to hear of your experiences with our latest software product. Please call us if you need assistance, have questions, or otherwise want to comment on your iPSC system.

1-800-421-2823 (Customer Support Response Center)
(44) 793 641 469 (in England)
Your Local Intel Sales Office (in Europe)
support@ssd.intel.com (Internet address)

Supercomputer Systems Division is trying to produce the best documentation for your needs. If you have comments about the iPSC manuals, please fill out and mail the enclosed Comment Card. You can also send your comments electronically to the following address:

techpubs@ssd.intel.com (Internet address)

The Intel Supercomputer Users' Group promotes the exchange of information among users. Intel strongly supports the Users' Group and encourages participation in its activities, which include: Special Interest Groups (SIGs), an annual international users' conference, an e-mail task force, and a "freeware" library of user-contributed software, available electronically to all members of the Intel Supercomputer Users' Group. For membership information contact:

JoAnne Wold (503-629-7737)
joanne@ssd.intel.com (Internet address)

Sincerely,

Elliot Swan

Manager, Technical and Product Marketing
Intel Supercomputer Systems Division

Enclosure: Improvement List

Improvements in Release 3.3 Included in Update 9/16

The following software improvements are included in Release 3.3 Update 9/16.

1. **Incorrect "PID in use" message no longer occurs.**
   This message occurred when a process running on the cube was not properly terminated. The NX operating system has been updated to prevent this problem.

2. **load hangs reduced**
   Several problems that caused **load** to hang have been fixed. Temporary restriction: it is currently impossible to load programs from file systems that are mounted on the SRM using NFS unless they have world read permissions.

3. **killcube no longer hangs when messages do not flush properly**
   Several problems that caused **killcube** to hang have been fixed.

4. **SRM panics reduced**
   Fixes have been made to prevent corrupting the message header queues.

5. **System console no longer freezes**
   Under some circumstances the DCM driver could go into an infinite loop or it could cause the system to go into an idle state. This problem has been fixed.

6. **Communication server hangs reduced**
   The *commser* process no longer hangs trying to send a message to another host process when the DCM driver is out of buffers.

7. **CFS corrupted header problem fixed**
   Under some circumstances, file header information in the CFS could be corrupted or destroyed. This problem prevented file access and caused errors from the CFS file checkers. This problem has been fixed.

8. **New tool added to document queues**
   A new tool, the *comminfo* utility, is now provided to display messages pending on the SRM.

September 1991
Order Number: 312218

iPSC®/2 AND iPSC®/860
RELEASE 3.3 UPDATE 9/16 SOFTWARE
PRODUCT RELEASE NOTES

intel® Corporation

REV.	REVISION HISTORY	DATE
---	Original Issue	09/91

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Preface

These release notes provide the latest information on the features and installation of Update 9/16 to the Release 3.3 system software for the following Intel Supercomputer Systems Division products: iPSC®/2, iPSC®/2S, iPSC®/860, and iPSC®/860S. In the remainder of the manual, the term "iPSC system(s)" is used to refer to these products.

These notes assume that you have programming experience and are familiar with the C or Fortran language and the UNIX operating system.

For more information, refer to the Release 3.3 Update 9/16 system software customer letter that accompanied your software.

Organization

Chapter 1	Describes the features of the Release 3.3 Update 9/16 system software.
Chapter 2	Provides system software installation information.

Notational Conventions

This manual uses the following notational conventions:

Bold Identifies command names and switches, system call names, reserved words, and other items that must be used exactly as shown.

Italic Identifies variables, file names, directories, processes, user names, and writer annotations in examples. Italic type style is also occasionally used to emphasize a word or phrase.

`Plain-Monospace`
Identifies computer output (prompts and messages), examples, and values of variables. Some examples contain annotations that describe specific parts of the example. These annotations (which are not part of the example code or session) appear in *italic* type style and flush with the right margin.

Bold-Italic-Monospace
Identifies user input (what you enter in response to some prompt).

`Bold-Monospace`
Identifies the names of keyboard keys (which are also enclosed in angle brackets). A dash indicates that the key preceding the dash is to be held down *while* the key following the dash is pressed. For example:

`<Break>` **`<s>`** **`<Ctrl-Alt-Del>`**

[ ] (Brackets) Surround optional items.

. . . (Ellipsis dots) Indicate that the preceding item may be repeated.

| (Bar) Separates two or more items of which you may select only one.

{ } (Braces) Surround two or more items of which you must select one.

Applicable Documents

For more information, refer to the following manuals:

iPSC® System Manuals

(NEW) *Intel® Supercomputer Systems Division System Log Book*
311927-003
Provides forms on which to keep system maintenance logs.

(NEW) *iPSC® System Technical Documentation Guide*
312026-002
Describes the technical documentation that supports the iPSC System and tells how to use the various documents.

(REV) *iPSC®/2 and iPSC®/860 C Commands and Routines Quick Reference*
311610-004
Summarizes all C routines and commands for the iPSC system.

iPSC®/2 and iPSC®/860 C Language Reference Manual
311567-004
Describes the Green Hills C compiler for the iPSC/2 and iPSC/860 systems.

(REV) *iPSC®/2 and iPSC®/860 Fortran Commands and Routines Quick Reference*
311615-004
Summarizes all Fortran routines and commands and for the iPSC system.

(REV) *iPSC®/2 and iPSC®/860 Hardware Installation Manual*
311461-003
(Replaces 311461-001 and 313990-001)
Describes installation and powering up of all iPSC system configurations.

(NEW) *iPSC®/2 and iPSC®/860 Interactive Parallel Debugger Commands Quick Reference*
312042-001
(Replaces 311798-001)
Summarizes all iPSC system IPD commands.

(NEW) *iPSC®/2 and iPSC®/860 Interactive Parallel Debugger Manual*
312043-001
(Replaces 311569-002 and 311826-001)
Tells how to use IPD, the iPSC system concurrent debugger.

iPSC®/2 and iPSC®/860 Math Libraries Reference Manual
311868-001
Describes the math libraries available on the iPSC system.

(NEW) *iPSC®/2 and iPSC®/860 Network Queueing System Manual*
312061-002
Tells how to use the network queueing system software.

(REV) *iPSC®/2 and iPSC®/860 Programmer's Reference Manual*
311708-004
(Replaces 311071-003, 311019-003, and 311831-001)
Provides detailed information on all C and Fortran routines and commands for the iPSC system.

(REV) *iPSC®/2 and iPSC®/860 Site Preparation Guide*
312028-001
Tells the customer how to prepare a site for the installation of an iPSC system.

iPSC®/2 and iPSC®/860 System Acceptance Test User's Guide
311870-001
Tells how to use the System Acceptance Test.

PSC®/2 and iPSC®/860 System Administrator's Guide
311014-006
(Replaces 311842-001 and 311833-001)
Describes the system administration tasks related to operating and maintaining an iPSC system.

iPSC®/2 and iPSC®/860 User's Guide
311532-007
Overviews the iPSC system, including hardware and software architectures.
Tells how to develop and run programs.

iPSC®/2 Fortran Language Reference Manual
311020-004
Describes the Green Hills Fortran compiler for the iPSC/2 system.

iPSC®/2 Simulator Manual
311534-003
Tells how to use the iPSC/2 Simulator for software development.

(NEW) *iPSC®/860 Basic Math Library User's Guide*
312128-001
Describes the basic linear algebra subroutines for the iPSC/860 systems.

(NEW) *iPSC®/860 C Compiler User's Guide*
312130-001
(Replaces 312006-001)
Describes the C cross-compiler and compiler driver for iPSC/860 systems.

(NEW) *iPSC®/860 Fortran Compiler User's Guide*
312131-001
(Replaces 312006-001)
Describes the Fortran cross-compiler and compiler driver for iPSC/860 systems.

(NEW) *iPSC®/860 Parallel Performance Analysis Tools Manual*
312139-001
Tells how to use the performance analysis software for the iPSC/860 system.

Intel® Manuals

UNIX System V Release 3.2 TCP/IP Administrator's Guide and Reference
465728-001
(Replaces Excelan TCP/IP documentation)
Describes TCP/IP Network administration.

UNIX System V Release 3.2 TCP/IP Programmer's Guide and Reference
465729-001
(Replaces Excelan TCP/IP documentation)
Describes the TCP/IP Network programming environment and provides information on programming tools.

UNIX System V Release 3.2 TCP/IP User's Guide and Reference
465727-001
(Replaces Excelan TCP/IP documentation)
Describes the TCP/IP Network programming environment and provides user information.

i860™ 64-Bit Microprocessor Assembler and Linker Reference Manual
240436-003
Tells how to use the i860 microprocessor assembler and linker. When you order this manual, you also receive the following manuals:

i860™ 64-Bit Microprocessor Object File Utilities Reference Manual
464410-002
Provides reference information for using the i860 microprocessor object file utilities.

i860™ 64-Bit Microprocessor Simulator and Debugger Reference Manual
240437-003
Describes the i860 microprocessor debugger and simulator.

i860™ 64-Bit Microprocessor Programmer's Reference Manual
240329-002
Tells how to use the i860 microprocessor.

UNIX Release R3.2 Manuals Literature Kit, UNXSYS386R3.2
Consists of the following documents:

(NEW) *UNIX System V Integrated Software Development Guide*
465274-001
Supplies information needed to write application software and installable drivers for new hardware additions for UNIX.

(NEW) *UNIX System V Introduction to UNIX System V*
465273-001
Introduces you to UNIX System V Release 3.2 on PC AT compatible computers using Intel386™ and Intel486™ microprocessors.

(NEW) *UNIX System V Network Programmer's Guide*
465282-001
Describes the UNIX System network programming environment, and provides detailed descriptions of programming tools.

(NEW) *UNIX System V Programmer's Guide, Vol. I*
465277-001
Describes the UNIX System programming environment, and provides detailed descriptions of programming tools.

(NEW) *UNIX System V Programmer's Guide, Vol. II*
465278-001
Describes the UNIX System programming environment, and provides detailed descriptions of programming tools.

(NEW) *UNIX System V Programmer's Reference Manual*
465276-001
Contains descriptions of commands, system calls, subroutines, libraries, file formats, macro packages, and character set tables.

New Features 1

New comminfo Command

comminfo is a new command that has been added to display the queues of pending messages on the SRM. **comminfo** has two optional arguments:

-a Returns message information on the cubes that you own on the SRM from which you invoked the command.

-s Returns message information on all the cubes on the SRM from which you invoked the command.

Executing the **comminfo** command with no arguments returns message information in the current attached cube.

For example, when the system is running and usable with no user activity taking place, the **comminfo -s** command will show the following message information:

```
% comminfo -s

                Pending RECV messages

  Waiting pid   Message Type   Blocked   Username  Cubename     ID
  ===========   ============   =======   ========  ===========  ==
          -34     1000000015       yes   root      iocube        1
          -64     1000000020       yes   root      iocube        1
         2329     2000000041       yes   root      iocube        1
```

```
                    Pending SEND messages

     For                From           Type       Size     Username Cubename     ID
================ ================ ========== ========= ======== ========== ==
(host:       -9) (  -1:      -49) 1000000028         4 root     iocube       1
%
```

In the previous example, under "Pending RECV messages":

- PID -34 (*loaderproc.srm*) is waiting for a message of type 1000000015 (**LOAD_REQUEST**)
- PID -64 (*fserver*) is waiting for a message of type 1000000020 (**FILE_REQUEST**)
- PID 2329 (*comminfo*'s UNIX PID) is waiting for a type 2000000041 (**COMMSER_REPLY**).

Under "Pending SEND messages":

- PID -49 (*sockproc*) on an unknown node sent a message of type 1000000028 (**SOCKET_IO**) to PID -9 on the SRM (*bootcube*).

All of these message are associated with cube ID 1 (*iocube*).

Note that negative PIDs are system processes.

Here is an example of the message information returned for a **comminfo -s** command when the system is busy:

```
                    Pending RECV messages

  Waiting Pid    Message Type    Blocked    Username   Cubename      ID
  ===========    ============    =======    ========   ===========   ==
                      -39             -1        yes    jclark     joel          5
          -34      1000000015        yes     root       iocube        1
          -64      1000000020        yes     root       iocube        1
          101               6        yes     soetrisn   HANA          10
        23727      2000000041        yes     root       iocube        1

                    Pending SEND messages

     For                From           Type       Size     Username Cubename     ID
================ ================ ========== ========= ======== ========== ==
(host:       -9) (  84:      -49) 1000000028         4 root     iocube       1
(host:      200) (  48:        0)         300         8 weeratun ARC3D        6
(host:      -64) (  25:        0) 1000000020        45 weeratun ARC3D        6
(host:      -65) (  40:        0) 1000000020        45 weeratun ARC3D        6
(host:      -65) (  64:      -62) 1000000020       100 weeratun ARC3D        6
(host:      -65) (  64:      -62) 1000000020       100 weeratun ARC3D        6
(host:      -64) (  64:      -62) 1000000020       100 weeratun ARC3D        6
```

```
(host:     -65) (  64:     -62) 1000000020      100 weeratun ARC3D        6
(host:     -64) (  10:       0) 1000000020       52 soetrisn HANA        10
(host:     -64) (   2:       0) 1000000020       52 soetrisn HANA        10
(host:     -64) (   3:       0) 1000000020       52 soetrisn HANA        10
(host:     -64) (   9:       0) 1000000020       52 soetrisn HANA        10
```

In the previous example, under "Pending RECV messages":

- PID -39 (*tohost*) is waiting for any type message for the remote host cube *joel* owned by user *jclark*, cube ID 5.
- PID -34 (*loaderproc.srm*) is waiting for a message of type 1000000015 (**LOAD_REQUEST**).
- PID -64 (*fserver*) is waiting for a message of type 1000000020 (**FILE_REQUEST**) for the *iocube*.
- PID 101 associated with cube ID 10 owned by user *soetrisn*, is waiting for a message of type 6 (an application-specific message type).
- PID 23727 (*comminfo*'s UNIX PID) is waiting for a message of type 2000000041 (**COMMSER_REPLY**).

Under "Pending SEND messages":

- PID -49 (*sockproc*) on an unknown node sent a type 1000000028 message (**SOCKET_IO**) to PID -9 (*bootcube*).
- In cube 6, owned by user *weeratun* there are several messages:
  - The first one is a type 300 (non-system) message sent from node 48 to the host PID 200.
  - The next two are file service requests (which may be **printf**()s) from nodes 25 and 40 to host PIDs -64 and -65 respectively. -64 and -65 are both *fserver* PIDs. Notice that PID -64 only serves nodes 0 through 31. PID -65 serves nodes 32 through 63, PID -66 would serve nodes 64 through 95, and PID -67 would serve nodes 96 through 127.
  - The next four messages are messages of type 1000000020 from PID -62 (*adminproc*) destined for the *fservers*. These are most likely messages notifying the *fservers* that processes have terminated in cube 6.
- The next four messages, type 1000000020, are file service requests from various nodes in cube 10, owned by user *soetrisn*.

If you have the iPSC®/2 or iPSC®/860 Source Product Code, the iPSC source files */usr/ipsc/src/h/pid.h* and /usr/*ipsc/src/h/msgtype.h* define the use of system PIDs and message types. If you have Remote Host installed, the source files */usr/ipsc/rhost/h/pid.h* and */usr/ipsc/rhost/h/msgtype.h* define the use of Remote Host PID's and message types although this command is not supported on Remote Host.

Use this information to help in determining how the system buffers are used and if there is a problem with the system. Users may be asked to cleanup the buffers by receiving the pending messages or killing and releasing the cube.

Software Installation 2

Introduction

This chapter describes how to install the Release 3.3 Update software. If you have any questions, please contact SSD Customer Support Response Center:

1-800-421-2823 (Customer Support Response Center)
(44) 793 641 469 (in England)
Your Local Intel Sales Office (in Europe)
support@ssd.intel.com (Internet address)

Installing The Release 3.3 System Software Update

NOTE

You *must h*ave the iPSC System Software Release 3.3 installed on your system. If you are using iPSC/860 software, the iPSC/860 portion of the Release 3.3 Extension Software must be installed before you install the iPSC System Software Update tape. If you reinstall any of these packages, you must also reinstall the update. See the *iPSC®/2 and iPSC®/860 Release 3.3 Software Product Release Notes* for information on how to install these packages.

Installation Time:	Approximately 15 minutes.
Installation Medium:	1 cartridge tape labeled "iPSC®/2/860 Update 9/16 Release 3.3" (part number 312216-001)
Information you need:	*root* password.

1. Login as *root*.
2. Execute the following to put the SRM in the maintenance mode:

   ```
   shutdown -is -g0 -y
   ```

   The following message is displayed:

   ```
   Type Ctrl-d to proceed with normal startup
   (or give root password for system maintenance):
   ```

3. Enter the root password. The following message is displayed:

   ```
   Entering System Maintenance Mode
   ```

4. Mount the *usr* partition:

   ```
   /etc/mount /dev/dsk/0s3 /usr
   ```

   The following message is displayed:

   ```
   mount -f s51K /dev/dsk/0s3 /usr
   ```

5. Enter ***installpkg***.
6. When the following message appears:

   ```
   Are you installing from tape (y/n)?
   ```

   Enter *y*.

7. When the following message appears:

   ```
   Insert Installation Tape in drive and press <RETURN>.
   ```

Insert the installation tape labeled "iPSC®/2/860 Update 9/16 Release 3.3" into the tape drive (label up, exposed tape to the left; push until the tape cartridge locks into place).

8. Press **<Enter>**.

9. Eventually, the following messages appear:

```
iPSC E1 i860 Extension Software Update Release 3.3
iPSC S1 System Software Update Release 3.3
Do you want to install all of the above packages? <y/[n]>:
```

What you install depends on what you use. Install both software update packages if you are an iPSC/860 user, otherwise install the System Software Update Release 3.3 (option S1) only.

If you don't want to install all of the packages, press **<Enter>** (to accept the default *n*). The system then prompts you to select the packages to install. Enter *y* for the packages you want and *n* for the ones you don't want.

The system prompts you to press **<ESC>** to avoid shutdown or press **<Enter>** to initiate shutdown. Press **<Enter>**.

10. When the message "Reboot the system now." appears, enter **<Ctrl-Alt-Del>** to reboot the updated system. The installation is now complete and the system is ready to use.

NOTE

Since this update package includes an updated host library, your iPSC host applications should be re-linked after the update is installed using -host. Some of the enhancements provided by this update will not be seen unless this is done.

If you ever experience the message "Commser not responding" on the **SRM** during normal cube usage, reboot the SRM before booting the cube. This will avoid a possible panic during the bootcube process.

A "Commser not responding" message on a remote host workstation can be fixed by having the remote host user issue a **rebootcube** command on the remote host workstation.