

Soft-ICE User's Guide

By Nu-Mega Technologies P.O. Box 7780 Nashua, NH 03060-7780 (603) 889-2386
Copyright Nu-Mega Technologies @, 1987 - 1989. All rights reserved. No part of this publication or the enclosed software may be reproduced or distributed in any form or by any means without the prior written permission of Nu-Mega Technologies. It is permitted to make copies of the Soft-ICE diskette to be used solely for backup in case of destruction of the original.

We welcome your suggestions and comments regarding improvements to Soft-ICE or this publication. Changes will be incorporated in new editions of this publication and in new versions of Soft-ICE software. Nu-Mega Technologies reserves the right to make improvements of changes to this product at any time without notice.

While every reasonable precaution has been taken in the preparation of this publication and software, Nu-Mega Technologies assumes no responsibility or liability of any kind for errors or omissions, or for the consequences of a such errors. The program is provided "as is" without warranty of any kind. The entire risk as to the quality and performance of this program is to you. Should the program prove defective, you assume the entire cost of all necessary servicing, repair or correction.

i

The following trade names are referenced throughout this Manual:

IBM, PCDOS, Personal Series II, AT, MDA, CGA, EGA, and VGA are trademarks of International Business Machines Corporation.

MSDOS, DEBUG, SYMDEB, CODEVIEW, Microsoft Windows, Ramdrive and Microsoft are trademarks of Microsoft Corporation.

8086, 80286, 80386 and Intel are trademarks of Intel Corporation.

CP/M is a trademark of Digital Research.

Soft-ICE, MagicCV, and MagicCVW are trademarks of Nu-Mega Technologies.

Compaq is a trademark of Compaq Computer Corporation.

ii CONTENTS

CHAPTER 1

Page

Introduction	
1.1 Product Description.....	2
1.2 Using This Manual.....	4
1.3 System Requirements.....	5

SECTION I -- Learning Soft-ICE

CHAPTER 2

Getting Started

2.1 The Diskettes.....	8
2.2 Loading Soft-ICE.....	9
2.3 Unloading Soft-ICE.....	13
2.4 Reloading Soft-ICE.....	13

CHAPTER 3

Debugging in 30 Minutes

3.1 Introduction.....	16
3.2 Popping Up the Window.....	16
3.3 Returning From the Window.....	16
3.4 Changing the Window Size.....	16
3.5 Moving the Window.....	17
3.6 Line Editing Keystrokes.....	17
3.7 Interactive Status Line.....	18
3.8 Command Syntax.....	19
3.9 Function Keys.....	21
3.10 Help.....	22
3.11 Tutorial.....	23

iii

SECTION II -- Commands

Notational Conventions	49
------------------------------	----

CHAPTER 4

Using Break Point Commands

4.1 Introduction	52
4.2 Setting Break Points	53
4.3 Manipulating Break Points	67

CHAPTER 5

Using Other Commands

5.1 Display and Edit Commands	76
5.2 I/O Port Commands	89
5.3 Transfer Control Commands	92
5.4 Debug Mode Commands	103
5.5 Utility Commands	109
5.6 Specialized Debugging Commands	116
5.7 Windowing Commands	130
5.8 Debugger Customization Commands	137
5.9 Screen Control Commands	148
5.10 Symbol and Source Line Commands	158

SECTION III -- Support Features

CHAPTER 6

Soft-ICE Initialization Options

6.1 Introduction	166
6.2 Loading Soft-ICE from the DOS Prompt .	166
6.3 Loading Soft-ICE as a Loadable Device Driver	167
6.4 The Soft-ICE Initialization File S-ICE.DAT	171

iv

CHAPTER 7

Symbolic and Source Level Debugging Page

7.1 Introduction	178
7.2 Preparing for Symbolic or Source Debugging	178
7.3 Reserving Memory for Symbols and Source Files	181
7.4 Loading Programs and Symbol Files	181
7.5 Debugging With Symbols	184
7.6 Debugging With Source	185

CHAPTER 8

Expanded Memory Support

8.1 Introduction	190
8.2 Configuring the EMM Environment	191
8.3 Other EMM Features	194
8.4 EMM Debugging	195

CHAPTER 9

Back Trace Ranges	
9.1 Introduction	198
9.2 Using Back Trace Ranges	199
9.3 Special Notes	201

CHAPTER 10

Using Soft-ICE with MagicCV or MagicCVW

10.1 Introduction	204
10.2 Running Soft-ICE with MagicCV or MagicCVW	204
10.3 Special Considerations	205
10.4 The Soft-ICE ACTION command	207

v

SECTION IV -- Advanced Topics

CHAPTER 11

Advanced Features

11.1 Using Soft-ICE with other Debuggers ..	210
11.2 User-Qualified Break Points	212
11.3 The Window in Graphics Mode	216
11.4 Expanded Memory Debugging Features ...	216
11.5 Extended Memory Debugging Features ...	218

CHAPTER 12

Special Debugging Problems

12.1 Loadable Device Drivers	222
12.2 Boot Loaders	223
12.3 Interrupt Routines	224
12.4 Non-DOS Operating Systems	225

CHAPTER 13

Theory of Operation

13.1 Activating Other Debuggers	228
13.2 Virtual Machine Basics	228

APPENDIX A

Functional Command List	233
-------------------------------	-----

APPENDIX B

Alphabetic Command List 237

vi

APPENDIX C

Keystroke Function List 241

APPENDIX D

Error Messages and Descriptions 243

APPENDIX E

Troubleshooting Guide 251

INDEX 257

vii