ICE 4000
Hardware and Installation Manual

Version 1.0_SPOS_05D

September 4, 2001

The Global Leader in Electronic Transaction Solutions

WORLDWIDE
PAYMENT SOLUTIONS

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Trademarks

FCC Part 15 (ICES-003)

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC (ICES-003) Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Part 68 Requirements Notice

This equipment complies with Part 68 of the FCC Rules. On the bottom of this equipment is a label that contains the FCC Registration Number and Ringer Equivalence Number (REN) for this equipment. If requested, you must provide this information to your telephone company.

NOTE: REN is not required for some types of analog or digital facilities.

This equipment uses an RJ11 jack.

An FCC-compliant telephone cord and modular plug are provided with this equipment. It is designed to be connected to the telephone network or premises wiring using a compatible modular jack that is Part 68-compliant. See installation instructions for details.

The REN is useful to determine the number of devices you may connect to your telephone line and still have all those devices ring when your telephone number is called. In most but not all areas, the sum of the RENs of all devices connected to one line should not exceed five. To be certain of the number of devices you may connect to your line, contact your local telephone company to determine the maximum REN for your calling area.

NOTE: REN is associated with loop-start and ground-start ports. Do not use for E&M or digital ports.

If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. However, if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

Your telephone company may make changes in its facilities, equipment, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be notified in advance to give you an opportunity to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact the Hypercom Repairs Department at (602) 504-5378 for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem is corrected or until you are sure that the equipment is not malfunctioning.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

This telephone receiver is hearing-aid compatible if applicable.

CTR21

The equipment has been approved to Commission Decision, CTR21, for pan-European single terminal connection to the Public Switched Telephone Network (PSTN). However, due to differences between the individual PSTNs provided in different countries, the approval does not, of itself, give an unconditional assurance of successful operation on every PSTN network termination point. In the event of problems, you should contact your equipment supplier in the first instance.

Industry Canada (IC) Notice

NOTICE: The Industry Canada (IC) label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational, and safety requirements described in the appropriate Terminal Equipment Technical Requirements documents. The department does not guarantee the equipment will operate to user satisfaction.

Before installing this equipment, ensure that it is acceptable for connection to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. Compliance with these conditions may not prevent degraded service in some situations.

A representative designated by the supplier should coordinate repairs to certified equipment. Any repairs or alterations to this equipment or any equipment malfunctions may cause the telephone communications company to request that the user disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines, and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas. **Caution:** Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority or electrician, as appropriate.

“**NOTICE:** The Ringer Equivalence Number (REN) assigned to each terminal device provides an indication of the maximum number of terminals that may be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject as long as the sum of the Ringer Equivalence Numbers of all the devices does not exceed five.

REN: 0.3B

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Introduction

The *ICE 4000 Hardware and Installation Manual*, is a comprehensive guide to working with the Hypercom® ICE 4000 terminal.

Guide Organization

This book is designed to provide you with information relevant to Hypercom equipment. This book is divided into two chapters:

- Chapter 1 Equipment Information: describes the ICE 4000 terminal in detail
- Chapter 2 Equipment Installation: describes how to install the ICE 4000 terminal

Who Should Use This Guide

This guide is intended for terminal operators, technicians, or those who oversee the installation of POS hardware.

Guide Conventions

This section provides information to help you understand the procedures and concepts presented in this guide. The following special terms and style conventions are used throughout this document:

Component names: Special bold text highlights certain items including the names of window and dialog box components. This text appears in instructions for specific actions such as clicking buttons, typing in text boxes, and selecting from lists. Some examples are:

From the **Main** tab page of the **Group Definition** dialog box, click **List**.

Emphasis: Emphasis is indicated by indented text, as follows:

NOTE: A note contains neutral or positive information supplementing the main text. It is often information that applies only to special cases.

IMPORTANT: Important statements draw attention to information crucial to using the product successfully. Pay special attention to Important statements.

Procedures: Numbered procedures have a special graphic appearing in the margin of the text. The words *Step-by-Step* also appear in bold at the beginning of the procedure.

Step-by-Step

To perform a procedure:

1. Follow the steps outlined in the procedure.
2. Most procedures have at least two steps.
   a. This is a substep.
   b. Substeps must be completed in the order given.

Caution and **Warning** boxes: When you see a Caution or Warning message, read the information promptly and carefully before proceeding. The formats for the boxes follows.

CAUTION

Caution advises that a negative result such as a loss of data may occur.

WARNING

Warnings provide information that is essential to the safety of the user, the equipment, or both. Failure to do as instructed may result in physical damage.

Terminal Information

The Hypercom ICE 4000 terminal is a fully functional terminal that supports credit, debit, EBT, check verification and guarantee, and on-screen advertising through Term-Master Suite and ICE-PAC.

When communication with the host is interrupted, the terminal supports offline transaction capture. These transactions are then communicated to the host before settlement. At settlement, the terminal totals are matched with host totals. In the rare instance of non-matching totals, automatic batch uploading allows accurate matching of terminal and host transaction details and provides rapid automated arbitration and balancing.

Settlement functions are either password protected for manual activation or are handled automatically at a time pre-set to meet merchant needs.

The ICE 4000 terminal provides application-level statistical and diagnostic information to the host at the end of each settlement period. This information enables the network operator or processor to be actively involved in maintenance and service.

For software maintenance, the Hypercom ICE 4000 terminal uses application downloading from the Hypercom PC-based Term-Master, terminal-to-terminal loading (fast loading), or loading from the processing host.

The Hypercom Term-Master software manages the ICE 4000 terminal configuration. Term-Master is a PC application that can store, retrieve, update, and transmit a custom configuration for any terminal in a customer terminal population. Term-Master also handles terminal software loading using an optional dial-up request and terminal operation statistics.

For initial configuration, you enter terminal-specific information using Term-Master before the terminal goes online for full initialization of operating parameters from the processing host. See Figure 1-1 on page 1-2.

Figure 1-1. ICE 4000 terminal

Features

- Integrated thermal printer
- 1 MB and optional 1.5 MB
- Integrated PIN and signature capture pads
- Smart card support
- Multi-host application support
- High-contrast 160 x 160 FSTN display with integrated 12-bit resolution
- Optional full track 1 & 2 simultaneous card reader
- Multi-tasking operating system
- Electronic receipt capture
- On-screen advertising available

ICE 4000 Hardware Features

The following is a list of the ports and features of the ICE 4000 terminal:

Comm Port

The comm port allows the ICE 4000 terminal to communicate with external devices such as an ECR (electronic cash register), OCR (optical character reader) wand, bar code reader, check reader, or an external PIN pad through an RS232 or RS485 connection.

Power Port

The power port supports two types of Hypercom power adapters. The Linear power adapter is used within the United States of America. The Switcher power adapter is used internationally.

Contrast Control Dial

Rotating the Contrast Control Dial, located on the left side of the terminal, changes the contrast of the display screen.

Terminal Modem

The optional internal modem, the Hypercom FastPOS™ 9600, is compatible with the Bell 212A modem and the CCITT V.22 interface and provides for Asynchronous or Synchronous operation at 9600 bps. The optional modem is suitable for both dial and leased-line operation.

Terminal Radio

The ICE 4000 supports four radio types: CDPD (cellular digital packet data), Mobitex (Cingular), GSM, and the 900 MHz.

Terminal Power Adaptors

Hypercom offers two types of terminal power adaptors. The Linear power adaptor is used within the United Stated of America. The Switcher power adaptor is used internationally.

Transactions and Functions

The ICE 4000 terminal supports the full transaction set required for credit, debit, EBT, check verification and guarantee, proprietary cards, and mail and phone orders.

Term-Master supports automated terminal configuration, terminal interrogation, automated program changes, and merchant installation.

Terminal Initialization

Automated Terminal Configuration is downloaded from the host or from the Hypercom Term-Master application. Term-Master terminal profiles are downloaded through terminal initialization to meet the specific requirements of merchant categories such as restaurants for tips, retail, supermarkets, and the hospitality industry.

Terminal Diagnostics

Term-Master supports the reporting of status and statistics such as response time measurements, communication errors, re-dials, card-read errors, and password review.

Application Program Changes

Program changes are automated and downloaded through either a host-resident process or Term-Master.

Financial Integrity

The ICE 4000 terminal generates automatic reversals to achieve total financial transaction integrity. These reversals ensure that communications and processing errors do not result in lost transactions, duplicate processing, or the failure of terminals to balance. The ICE 4000 terminals also enable simple terminal balancing and settlement, while eliminating network overloads caused by end-of-day batch transfers.

Fast Response Times

The fast response time of the ICE 4000 terminal is the direct result of the efficient SDLC protocol, which permits pre-dialing and message compression. At a speed of 9600 bps, EFT messages of 150 characters are transmitted in 0.8 seconds, increasing throughput four to ten times over traditional 300 bps Asynchronous terminals.

Reduced Communications Costs

The ICE 4000 terminals reduce transaction costs by taking advantage of recent advances in communications and networking technology. Using an optional modem, the savings are generated through short dial-up online times, local area networking, and concentration using the Hypercom regional Network Access Controller (NAC) or Integrated Enterprise Network (IEN), reducing long distance costs and improving network economics. These terminals actively interface through the Hypercom NAC or IEN with SNA, X.25, and BISYNC networks already in place.

Networking Efficiency

The ICE 4000 terminals are totally compatible with the Hypercom family of network equipment (NAC and IEN), providing end-to-end network optimization and concentration to keep communication costs low.

Term-Master

The ICE 4000 terminals support parameter and software downloading. Parameter downloading does not affect merchant totals due to the sophisticated architecture of the terminal. Term-Master collects Management Information System (MIS) statistics and can be interrogated online for speedy problem resolution. The PC-based Term-Master package supports software download requests from terminals even when the PC is unattended, ensuring terminal software is automatically kept up to date.The ICE 4000 terminals support on-screen advertising and can print custom receipt headers and footers. Screen images are downloaded through ICE-PAC and Term-Master Suite.

Using the FastCom modem, a merchant can install the ICE 4000 wireless terminal through the menu-driven procedure that identifies the telephone line profile for tone or pulse, or PABX access code. The terminal prompts for the telephone numbers for initialization and network management, and prompts for a unique terminal identification number with a check digit.

2

Installation Procedures

This chapter describes how to install the ICE 4000 terminal. The available ports on the ICE 4000 are described and identified for you, along with instructions for operating the ICE 4000 terminal.

Installing the Battery Pack

The ICE 4000 uses a Lithium Ion battery. The ICE 4000 has built-in circuit protection and battery charger. If using the ICE 4000 as a mobile unit, plug the terminal in and let it charge for up to six hours. Use the following procedures to access the battery pack.

Step-by-Step

To access the battery pack on the ICE 4000 terminal:

1. Remove the battery cover by placing your finger in the battery access panel groove. Press in and lift the panel away from the ICE 4000.

2. Insert the battery with the label-side up, and be sure that the three metal connectors are facing the front of the terminal.

Figure 2-3. Installing the ICE 4000 Battery Pack

Powering up the Terminal

The ICE 4000 terminal operates using a +12/+15 Vdc power cable in conjunction with a 110-Volt grounded power receptacle.

Step-by-Step

To power up the ICE 4000 terminal:

1. Connect the +12/+15 VDC power cable from the AC adaptor to the terminal power socket labeled *PWR* on the bottom of the ICE 4000 terminal.

2. Plug the adaptor into a 110-Volt (or 220-Volt in some countries) grounded power receptacle. Be sure the connector is firmly seated. Press and hold the green power switch, which is located on the right side of the terminal. When the power is connected successfully, the terminal beeps twice and then performs a self-test and diagnostic routine.

WARNING

- Do not use an adaptor, a power extender adaptor, a power extender cable, or an AC outlet that does not have a ground connection.
- Do not disassemble the AC adaptor. Only qualified service personnel should service the adaptor.
- The AC adaptor was designed for indoor use only. Do not expose to rain or snow.
- Do not immerse in fluid.
- The reliability of electronic equipment is significantly reduces when it is powered from an underground outlet. A low-power AC adaptor connects power to the terminal. Connect only one terminal to the AC adaptor.

NOTE: To fully charge the battery for mobile use, plug in the +12/+15 VDC power cable and turn the terminal on. Leave the terminal powered up for six hours before using.

Using the Stylus

The Hypercom ICE 4000 terminal is operated by using the provided stylus. You must use the provided stylus; use of any other item may damage the touch-screen and void the manufacturer warranty. The stylus is located on the right side on the terminal, below the power button, and is stored in a built-in sheath.

Step-by-Step

To remove the stylus:

1. Place your finger on the raised grip of the stylus.
2. Push it up and away from the terminal to remove.

NOTE: When the stylus is not in use, return it to the sheath.

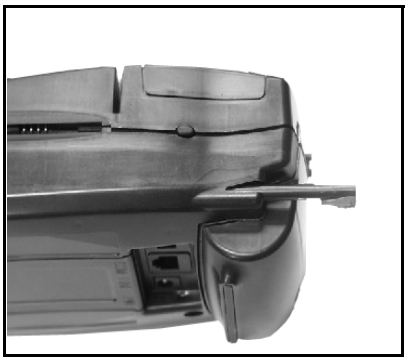

Figure 2-4. The ICE 4000 Stylus

Adjusting the Display Contrast

The ICE 4000 uses a contrast control dial to adjust the display. The contrast control dial is located on the side of the ICE 4000 terminal.

Step-by-Step

To adjust the contrast on the ICE 4000 terminal:

1. Place your finger on the Contrast Control dial.
2. Turn the Contrast Control dial clockwise to darken or counter-clockwise to lighten the contrast.

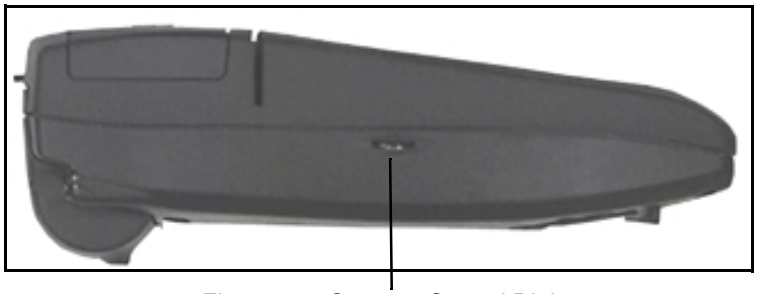

Figure 2-5. Contrast Control Dial

Loading Paper into the ICE 4000

The ICE 4000 uses a thermal paper roll for receipt printing.

Step-by-Step

To load paper into the ICE 4000:

NOTE: The software application must be loaded into the terminal before proceeding.

1. After powering up the terminal as shown in Powering Up the Terminal, slide the cover lock, located on the back of the terminal, to the right and remove the paper cover.
2. Place the ICE 4000 on its face.
3. Place the paper roll in the bucket so the paper feeds from under the roll, not over the top, and has a straight-line path into the printer paper-feed mechanism.
4. Feed the end of the paper under the paper guide in a straight path until the paper feeds automatically.
5. Replace the printer paper cover and slide the cover lock to the left.

Figure 2-6. Loading the paper roll

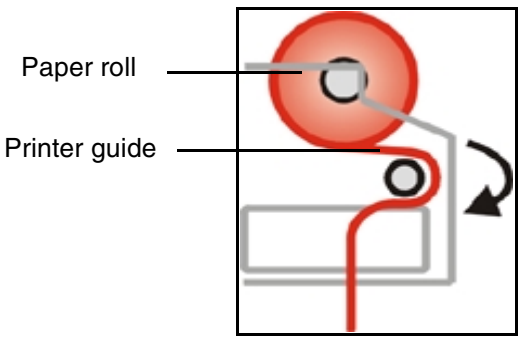

Figure 2-7. Loading the paper roll

Connecting the Telephone Line

If your ICE 4000 has a dial modem, use the following procedure to connect the telephone line.

Step-by-Step

To connect the phone line:

1. Insert one end of the telephone cable shipped with the ICE 4000 terminal into a dedicated analog modular telephone receptacle.

2. Insert the other end of the telephone cable into the opening marked *LINE* on the back panel of the ICE 4000 terminal. The use of a different telephone cable might result in improper operation. Ensure that the telephone line cable latches are firmly locked into the jacks on both the ICE 4000 terminal and the wall receptacle.

   NOTE: If a dial tone is not heard, check the cable connection. Connecting another telephone set into the wall jack helps determine whether the telephone line is working. Hypercom recommends that the terminal uses a dedicated telephone line. Hypercom terminals do not function using digital phone lines, for example, PBX lines.

Connectors

The ICE 4000 underpanel connectors include power (#1), battery (#2), SAM chip panels (#3), and RS232/PIN (#4) and line ports (#5).

Figure 2-8. ICE 4000 under panel connectors

Self-Test and Diagnostics

Following a successful power connection, a double beep indicates the terminal automatically initiated its self diagnostic routine. The self-test lasts approximately four seconds.

If the terminal is not loaded with software, the displays shown in the following table are typical.

Table 2-1. Self-test and diagnostics when software is not loaded

Description	Terminal response
SMIBOOTXXX: Boot program name XXX: Boot program release	**SMIBOOTXXX** **WAIT-SELF TEST**
The memory page status indicates that no program is loaded.	**MEMORY PAGE STATUS:** **BOOT: XXXX** **01: FFFFFFFFFFFFFF** **17: FFFFFFFFFFFFFF**
PE indicates Program Error. In this case, the program is not loaded.	**Restart** **Merchant Program** **Program Load** **Clear Page Memory** **Maintenance Funcs** **Fast Load**

Configuring the ICE Terminal

A configuration sets the parameters the ICE 4000 uses to communicate with Term-Master. When the configuration is complete, the terminal is able to receive the terminal application software.

Step-by-Step

To configure the ICE terminal:

Step	Action	Terminal response
	The boot menu appears.	Restart Merchant Program Program Load Clear Page Memory Maintenance Funcs Fast Load
1	Touch **Merchant Program** on the terminal display.	MERCHANT PROGRAM. TERMINAL ID NUMBER XXXXXXXXX 1 2 3 4 5 6 7 8 9 0 Q W E R T Y U I O P A S D F G H J K L Z X C V B N M
2	Type the terminal ID number, then touch **Enter**. **NOTE:** Some terminal IDs require 8 or 9 digits. If the check digit (ninth digit) is missing or incorrect, the terminal does not allow the entry of that ID. Verify the check digit with your Help Desk.	MERCHANT PROGRAM. INIT. TELEPHONE NO XXXXXXXXX 1 2 3 4 5 6 7 8 9 0
3	Type the initialization telephone number, then touch **Enter**. This is the phone number the terminal dials for the initialization.	MERCHANT PROGRAM. NMS TELEPHONE NO XXXXXXXXX 1 2 3 4 5 6 7 8 9 0
4	Type the NMS number, then touch **Enter**. This is the phone number the terminal dials for the software program load.	MERCHANT PROGRAM. DIAL 0-TONE 1-PULSE 1 2 3 4 5 6 7 8 9 0

Step	Action	Terminal response
5	Touch **0** for tone dialing or **1** for pulse (rotary) dialing, then touch **Enter**.	MERCHANT PROGRAM. PABX ACCESS CODE Del 0 1 2 3 4 5 6 7 8 9 A B C D E F
6	Touch the appropriate character for the PABX code if necessary, then touch **Enter**. **NOTE:** If you need an 8, 9, or any other access code to dial out, type it here.	PLEASE INITIALIZE OR CALL HELP-FE Restart Merchant Program Program Load Clear Page Memory Maintenance Funcs Fast Load
7	Touch **Cancel** on the terminal to return to the Idle prompt.	

Program Loading the ICE Terminal

A program load is required when no software is currently in the terminal. Depending on the software application, an average program load takes approximately 40 minutes to complete. The initialization process loads the merchant-specific information in a terminal.

In order to process debit transactions, you must authenticate or MAC (Message Authentication Code) the software in the ICE 4000 terminal. Please refer to the *PIN Pad Loader Operator's Manual* for further details.

Step-by-Step

To load a program into the ICE terminal:

Step	Action	Terminal response
	The boot menu appears.	PLEASE INITIALIZE OR CALL HELP-FE Restart Merchant Program Program Load Clear Page Memory Maintenance Funcs Fast Load
1	Touch **Program Load** on the terminal display.	PROGRAM LOAD CORRECT? NO YES
2	Touch **Yes** on the terminal display, or touch **Enter** on the terminal. The terminal checks the phone line for a proper connection.	PROGRAM LOAD CHECKING LINE
	The terminal detects a proper phone line connection and is waiting to detect a dial tone.	PROGRAM LOAD WAITING FOR DIAL TONE
	The terminal detects a dial and is waiting to dial out.	PROGRAM LOAD DIALING NOW
	The terminal has dialed out and is waiting for an answer from the host.	PROGRAM LOAD WAITING FOR ANSWER
	The terminal has made a connection and is communicating with the host.	PROGRAM LOAD TRAINING MODEM
	The terminal is downloading the software application from the host. The approximate time is 25 to 45 minutes.	PROGRAM LOAD LOADING MEM 01 X X X X
	The terminal has successfully downloaded the software application from the host.	PROG. LOAD PROG. LOAD GOOD

Initializing the ICE Terminal

After the terminal receives a new program load, an initialization is required to start the terminal operations. In other cases, when options are changed, such as a new card type, an initialization is required to update the terminal parameters. An initialization takes approximately 30 seconds to complete.

During an initialization, the terminal automatically connects to the initialization host to receive the downloading of the initialization parameters, known as the *terminal profile*.

Step-by-Step

To initialize an ICE terminals:

Step	Action	Terminal response
1	Touch **Menu** on the terminal. **NOTE:** The Idle prompt may vary depending on the terminal and its configuration.	MAIN X New Trans Batch Reports Terminal Server Tab Setup Tests Browser Functions Supervisor
2	Touch **Terminal** on the terminal display.	TERMINAL ← X Initialize Prog Load Shift View Train Mode Logon ICE-PAC NMS Call StatCall Deployment Lock Reset
3	Touch **Initialize** on the terminal display.	INITIALIZE X Correct? No Yes
4	Touch **Yes** on the terminal display to confirm. The terminal begins dialing the host.	COMMS DIALING NOW
	The terminal loads the initialization parameters. This process takes 25 seconds.	COMMS PROCESSING NOW
	The initialization is complete.	COMPLETE Transaction complete Continue

We Welcome Your Comments

Please fax this page with your comments to Hypercom Corporation at 602.504.4990.

Document Number: 940265-001, rev. D

1. In one word, how would you describe this guide? _____

2. How do you use this guide?

   - I read it from beginning to end.
   - I read only the sections that relate to my immediate needs.
   - I read only the sections that relate to my job.

3. Where do you usually look first to find information in this guide?

   - Table of contents
   - Index
   - Search through the pages until I find what I am looking for

4. How easily can you find information in this guide?

   1 (Not easily) 2 3 4 5 (Very easily)

5. How clear is the information in this guide?

   1 (Not clear) 2 3 4 5 (Very clear)

6. How easily can you follow the instructions described in this guide?

   1 (Not easily) 2 3 4 5 (Very easily)

7. How well did you understand the product before reading this guide?

   1 (Not well) 2 3 4 5 (Very well)

8. How well do you understand the product after reading this guide?

   1 (Not well) 2 3 4 5 (Very well)

9. The best aspect of this guide is _____.

10. The least useful aspect of this guide is _____.

Additional comments:

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Printed in the USA