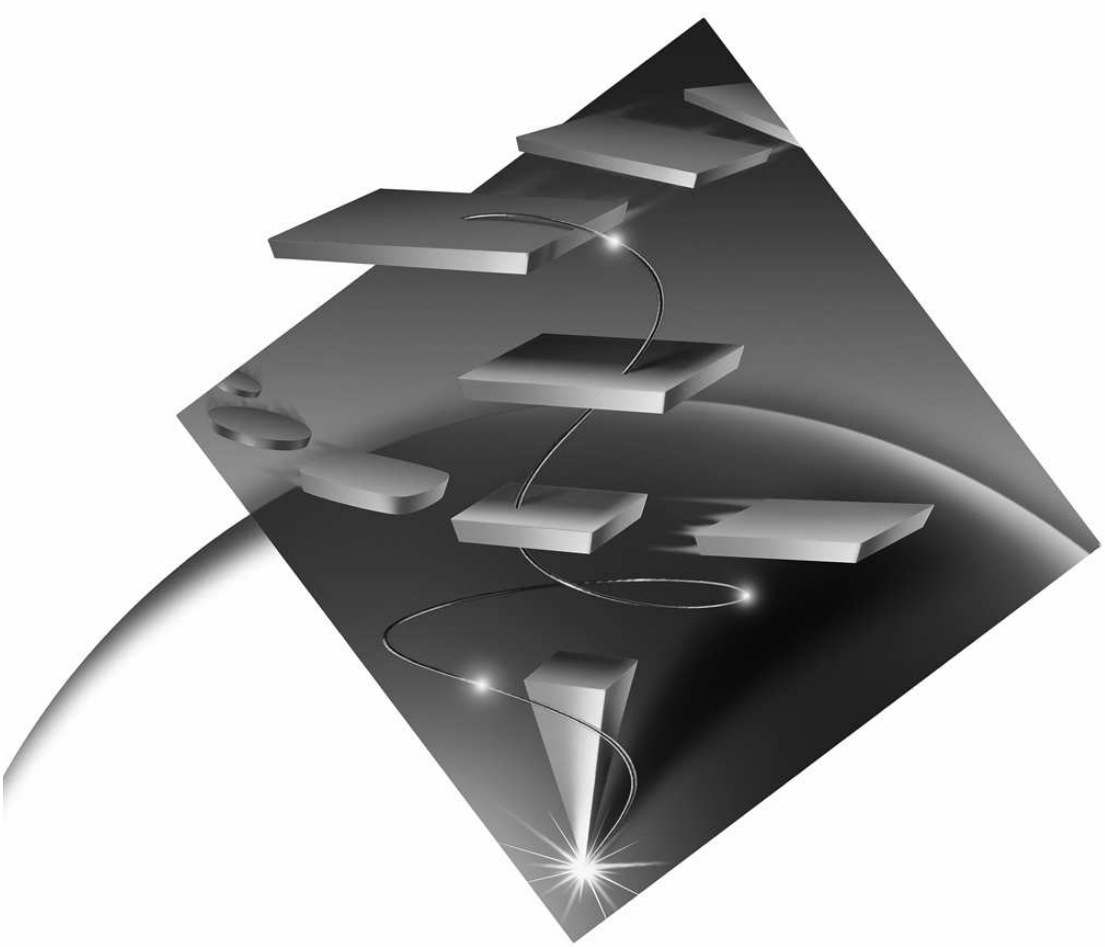
eNetwork Personal Communications
Version 4.2
for Windows 95 and Windows NT

Reference



SC31-8477-00

eNetwork Personal Communications
Version 4.2
for Windows 95 and Windows NT

Reference

SC31-8477-00

Note

Before using this information and the product it supports, be sure to read the general information under Appendix K, “Notices” on page 447.

First Edition (September 1997)

This edition applies to Version 4.2 of IBM eNetwork Personal Communications and to all subsequent releases and modifications until otherwise indicated in new editions or technical newsletters. Make sure you are using the correct edition for the level of the product.

Order publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the address below.

IBM welcomes your comments. A form for readers' comments may be provided at the back of this publication, or you may address your comments to the following address:

International Business Machines Corporation
Department CGMD
P.O. Box 12195
Research Triangle Park, North Carolina
27709-2195

When you send information to IBM, you grant IBM a nonexclusive right to use or distribute the information in any way it believes appropriate without incurring any obligation to you.

© **Copyright International Business Machines Corporation 1989, 1997. All rights reserved.**
Note to U.S. Government Users — Documentation related to restricted rights — Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

Contents

About This Book xvii
Who Should Read This Book xvii
How to Use This Book xvii
Organization xvii
Highlighting Conventions xix
Command Syntax Symbols xix

Part 1. General Information 1

Chapter 1. Personal Communications Highlights 3

Chapter 2. Where to Find More Information 9
Online Help 9
How to Use Online Help 9
Messages and Alerts 9
System-Fault Messages That Appear in Pop-Up Windows 9
OIA Messages 10
Alerts 10
Personal Communications Library 10

Chapter 3. Problem Determination and Reporting 11
Problem Determination (PD) 11
Symptoms 11
Environment 11
Problem Type 12
Problem Area 12
Problem Re-Creation 12
Problem-Source Identification (PSI) 12
Viewing Personal Communications Logs 13
Obtaining Trace Data 13
Problem Reporting (PR) 15
Contacting IBM 16
Statement of Service 16
Reporting Defects 17
Other Ways to Contact IBM 19

Chapter 4. Printing 21
Setting Up the Printer 21
Defining a Printer for a Session 21
Using PDT Files 22
PDT Files 22
Setting Printer Control Parameters 25
Setting Printer Control Items 29
Printing to Disk 29

Chapter 5. Transferring Files 31
Sending Files to the Host System 31
Receiving Files from the Host System 32
Using List Files 33

© Copyright IBM Corp. 1989, 1997

Creating List Files . . . 33
Editing Lists . . . 33
Managing Templates . . . 34
Adding Templates . . . 34
Replacing and Deleting Templates . . . 35
Testing Templates . . . 35
Defining Transfer Types . . . 35
Explanation of Items to Be Defined . . . 36
Setting Miscellaneous Transfer Options . . . 39
File-Transfer Timeout . . . 39
Clearing Sessions before Transfer (3270 Only) . . . 39
File Transfer Packet Size (3270 Only) . . . 39
Extension for List Files . . . 39
Status Window . . . 39
PC Code Page . . . 40
Enhanced Protocol (SBCS Global Network Connection Only) . . . 40
Default Host Command . . . 40
Default Directory for File Transfer . . . 40
Setting Up the Translation Table . . . 40
Changing the Translation Table . . . 40
Customizing the Translation Table . . . 41
User-Font Area (DBCS Only) . . . 41
Import/Export (3270 CICS Only) . . . 42
Transferring Files Using Import/Export . . . 42
Creating IDP Files . . . 43

Chapter 6. SNA Node Operations . . . 45
Considerations . . . 47
Virtual Memory . . . 47
Emulator session icons . . . 48
Migrating from Windows 95 to Windows NT . . . 48
Starting Node Operations . . . 48
Using the Menu Bar . . . 48
Displaying a Resource . . . 49
Starting a Resource . . . 49
Stopping a Resource . . . 49
Deleting a Resource . . . 49
Changing a HPR Path Switch . . . 50
Updating SNA Resources Dynamically . . . 50
Starting and Stopping the SNA Node Using the Command Line . . . 50

Chapter 7. Country Codes, Code Pages, and Character Sets . . . 53
Keyboard Country ID and Shift Support . . . 54
SBCS Code Pages and Character Sets . . . 55
DBCS Code Pages and Character Sets . . . 56
Host Code Page Tables . . . 57
Host Code Page 037-1/697-1 Brazil, Canada, Netherlands, Portugal, U.S., and 037/1175 Traditional Chinese . . . 58
Host Code Page 103/1047 Latin 1 (Open Systems) . . . 59
Host Code Page 273-1/697-1 Austria, Germany . . . 60
Host Code Page 277-1/697-1 Denmark, Norway . . . 61
Host Code Page 278-1/697-1 Finland, Sweden . . . 62
Host Code Page 280-1/697-1 Italy . . . 63
Host Code Page 284-1/697-1 Latin America, Spain . . . 64

Host Code Page 285-1/697-1 United Kingdom 65
Host Code Page 290 Japan (Katakana) Extended 66
Host Code Page 297-1/697-1 France 67
Host Code Page 420 Arabic Bilingual 68
Host Code Page 500-1/697-1 International 69
Host Code Page 803 Israel (Hebrew - Old Code) 70
Host Code Page 833/1173 Hangeul 71
Host Code Page 836/1174 Simplified Chinese 72
Host Code Page 870/959 Latin 2 - EBCDIC Multilingual 73
Host Code Page 871-1/697-1 Iceland 74
Host Code Page 00875 Greece 75
Host Code Page 941/424 Israel (Hebrew - Bulletin Code) 76
Host Code Page 1025/1150 Russian 77
Host Code Page 1025/1150 Cyrillic (Except Russian) 78
Host Code Page 1026/1 Latin 5 - Turkey 79
Host Code Page 1027/1172 Japan (Latin) Extended 80
Host Code Page 1112 Latvia, Lithuania 81
Host Code Page 1122 Estonia 82
Host Code Page 1123 Ukraine 83
Host Code Page 1130 Vietnam 84
Host Code Page 1132 Laos 85
IBM Japanese Character Set (2-Byte Codes) 86
Character Types 86
Character Size 86
IBM Kanji Codes 86
User-Font Area (User SENTEI MOJI RYOIKI) 87
IBM Traditional Chinese Character Set 88
IBM Simplified Chinese Character Set, GBK Code 88
IBM Hangeul Character Set 89
Thai Language Support 89

Chapter 8. Keyboard Layouts 91
Keyboard Layouts 91
Enhanced Keyboard, MS Natural Keyboard (3270 Only) 94
Enhanced Keyboard, MS Natural Keyboard (5250 Only) 96
Enhanced Keyboard, MS Natural Keyboard (Combined 3270 and 5250) . . 98
Enhanced Keyboard, MS Natural Keyboard (VT Only) 100
Space-Saving Keyboard (3270 Only) 102
Space-Saving Keyboard (5250 Only) 104
Space-Saving Keyboard (Combined 3270 and 5250) 106
5576-001 (3270 Only) 108
5576-001 (5250 Only) 110
5576-001 (Combined 3270 and 5250) 112
5576-A01 (3270 Only) 114
5576-A01 Keyboard (5250 Only) 116
5576-A01 Keyboard (Combined 3270 and 5250) 118
5576-002/003 (3270 Only) 120
5576-002/003 Keyboard (5250 Only) 122
5576-002/003 Keyboard (Combined 3270 and 5250) 124
APL Keyboard Layouts (3270 Only) 125
Key Map for Home3270 127

Chapter 9. Alerts 131

Part 2. Personal Communications/3270 135

Chapter 10. Building a Printer Definition Table (PDT) for PC/3270 137
"ASCII_PASSTHRU?" and "EBCDIC_PASSTHRU?" 137
Supplemental Explanation of PDF Statements for PC/3270 137
SCS TAB Setting 139
Printer Color Mixing 139
Printer Session Data Stream Support 140
3270 Data Stream 140
SCS Data Stream 141
Delimiting Print Jobs 142
Structured Fields 143

Chapter 11. File Transfer Commands for PC/3270 147
File Transfer Methods 147
Requirements and Restrictions 147
Sending and Receiving Files from the DOS Command Prompt 148
Using the VM/CMS SEND Command 148
Using the VM/CMS RECEIVE Command 152
Using the MVS/TSO SEND Command 155
Using the MVS/TSO RECEIVE Command 160
Using the CICS SEND Command 163
Using the CICS RECEIVE Command 167
Configuring File-Transfer Code Translation 170

Chapter 12. Considerations for the Use of PC/3270 Sessions 171
Host-Session Window Operations 171
Cursor Color 171
Releasing Insert Mode with Attention Keys 171
Scroll Bar 171
Scroll-Lock Key 171
3270-Session Screen-Size Control 171
Customizing a Display Translation Table 173
Support for Long File Names 174
File Transfer Function 174
Host File Name and Reserved Words 174
Changing the Packet Size When Import/Export Is Idle 174
WAIT Option for Multiple File Transfer 174
NOTRUNC and BLANK Options (SBCS Only) 175
Setting the VTAM PSERVIC Statement 175
Graphic Functions 175
Graphics Protocols 175
Drawing-Buffer Size 177
Using Bitmaps for Drawing 178
Print Buffer Size 178
Edit-Copy Buffer 178
Printer Fonts 178
Plotter 179
Hole in Screen Caused by Clearing a Graphic Character 179
Miscellaneous Restrictions for Graphic Functions 179
Considerations for Graphics Functions 179
Print Processing 180
Using a Printer with the Non-SNA DFT Attachment 180

Print Job Control Using SNA Timeout 180
SDDLU Considerations 182

Part 3. Personal Communications AS/400 185

Chapter 13. Building a Printer Definition Table (PDT) for PC400 187
Selecting and Changing the Printer Definition Table (PDT File) 187
Printer Definition File (PDF File) Format 187
"ASCII_PASSTHRU?" Keyword Support 192
"EBCDIC_PASSTHRU?" Keyword Support 192
Printer Definition Tables 193
Example Printer Definition Files 193
Field Names of Printer Definition Files 203
Parameter Definition of Printer Control Codes 208
Symbols of Printer Definition Files 209
Using Printer Control Codes 212
Printer Control Code Format 212
Supported Control Codes 212
SCS Commands Mapped to Printer Commands 214
Programming Notes 217
Restrictions and Notes for AS/400 Printer Commands and Printer Setup . 218
PFT Migration Utility 220
How to Use the PFT Migration Utility 220
Details of Migration 221

Chapter 14. Field Attribute Codes 249

Chapter 15. Data Transfer for PC400 251
Data Transfer Function Overview 251
Transferring Files from an AS/400 System to a Workstation 251
Transferring Files from a Workstation to an AS/400 System 252
Preparing for Data Transfer 254
Required Software Products 254
Transfer Function 254
Data Transfer Program 255
Data Concepts of the AS/400 System and Your Workstation 256
Creating a Workstation-to-AS/400 Transfer Request 258
Items to Be Specified 258
Saving, Opening, Changing, and Executing a Transfer Request 264
Creating an AS/400-to-Workstation Transfer Request 266
Items to Be Specified 268
Saving, Opening, Changing, and Executing a Transfer Request 283
Limited Usage of File Names and Field Names 285
Examples of Transfer Requests for Receiving 285
Receiving Part of an AS/400 File 286
Receiving Records Joined from Several AS/400 Files 287
Receiving Records Using File Qualifiers 288
Receiving with Field Missing Records Joined 288
Receiving with Records in a Same File Joined 289
Specifying Records to Be Included in a Group 289
Specifying Summary Records to Be Transferred 290
Functions Available from Pull-Down Menu 291
File 291

Setup (Only for AS/400→PC Transfer) . . . 291
File-Description Files . . . 294
Creating a File-Description File . . . 295
Example . . . 302
Data Conversions . . . 302
Record Size . . . 302
Data Types . . . 303
Personal Computer File Types . . . 306
AS/400 System-to-Personal Computer Performance Considerations . . . 325

Chapter 16. File Transfer for PC400 . . . 327
PC File Transfer with the CRLF Option . . . 327
Transfer to a Physical Source File . . . 328
Transfer to a Physical File . . . 328
Use of the DSPMBRLST Command . . . 328
Restrictions for Transferred File Size . . . 329
DBCS File-Transfer Option . . . 329

Chapter 17. Considerations for the Use of PC400 Sessions . . . 331
Scroll Bar . . . 331
Print Processing . . . 331
Printing GDI Fonts . . . 331
CPI/LPI of Device Fonts . . . 331
PCSERR999 Error Messages . . . 331
Disconnect in Testrequest to AS/400 on Telnet 5250 . . . 331
AS/400 Host Print Problem . . . 331
Printable Area . . . 332
PDT Mode . . . 332
Setting the Code Page . . . 332

Chapter 18. Displaying Grid Lines (DBCS Only) . . . 333
Limits for Displaying the Grid Lines . . . 333
Controlling the Grid-Line Format . . . 334
Displaying the Grid-Line Screen Format . . . 335
Deleting the Grid-Line Screen Format . . . 335
Grid-Line Screen-Format Displaying Mechanism . . . 336
Grid-Line Draw Control . . . 336
Grid-Line Draw Control Code . . . 337
Grid Line Designation Data . . . 337
Control Code for Deletion of the Contents of the Grid Line . . . 338
Combination Display of Grid-Line Screen Format and User Screen Format . . . 339

Part 4. Personal Communications/VT . . . 341

Chapter 19. VT Emulation . . . 343
Introduction . . . 343
Configuring a VT Session . . . 343
Session Parameters . . . 343
Optional Parameters . . . 345
Link Parameters . . . 345
Configuring Links for VT over Async . . . 346
Configuring Links for VT over Telnet . . . 348
Additional Configuration Information . . . 349

Using A VT Session . . . 353
VT220 Keyboard Characters . . . 354
Compose Key . . . 355
Transparent Mode . . . 359
OIA Line Display Messages . . . 360

Chapter 20. ASCII Host File Transfer . . . 361
Using XMODEM and YMODEM . . . 361
Choosing a Protocol . . . 361
XMODEM and XMODEM1K . . . 362
YMODEM and YMODEMG . . . 362
Receiving Files From an ASCII Host . . . 362
Defining Transfer Types . . . 363
Explanation of Items to Be Defined . . . 363
Miscellaneous Settings . . . 364
Send File to Host . . . 364
Selecting A File To Send . . . 364
Changing the Host-File Name or the Transfer-Type . . . 365
Quick Method of Sending a File . . . 365
Saving a List of Files to Send . . . 365
Sending a List of Files . . . 365
Example of ASCII Protocol Template . . . 365
Templates Defined . . . 365
Selecting Files to Send . . . 366
Basic Methods . . . 366
Select From a Send/Receive List . . . 366
Advanced Method . . . 366
Changing a List of Files . . . 366
Change the PC or Host File Name . . . 366
Delete File Names From List . . . 367
Add More File Names To List . . . 367
Saving the List of Files . . . 367
File-Name Extension for List Files . . . 367
Delete From List . . . 367
Open List File . . . 367
Save List File . . . 367
Transfer Types . . . 367
Receive File from Host . . . 367
Receiving Files to a Workstation Directory . . . 368
Selecting a File to Receive . . . 368
File Transfer Templates . . . 368
Defining Templates . . . 368
Automatic Generation of File-Names . . . 368

Part 5. Appendixes . . . 369

Appendix A. SNA Client/Server Concepts . . . 371
Terminology . . . 371
APPC Concepts . . . 372
Introducing APPC and CPI-C . . . 372
What Is a Transaction Program? . . . 372
What Is the Difference between APPC and APPN? . . . 373
Side Information Definitions . . . 374

APPC Issues and Considerations . . . 374
Improving Productivity Using APPC . . . 374
Improving Productivity Using CPI-C . . . 375
What Is a Logical Unit? . . . 375
LU Types . . . 375
Dependent and Independent LUs . . . 375
What Is a Session? . . . 376
What Is a Conversation? . . . 376
A Conversation between Two TPs . . . 377
Parallel Sessions between LUs . . . 377
SNA Communications . . . 377
SNA Node Operations . . . 378

Appendix B. Introducing AnyNet SNA over TCP/IP . . . 381
What Does AnyNet SNA over TCP/IP Do? . . . 381
Running APPC or CPI-C Applications over a TCP/IP Network . . . 381
Using AnyNet to Connect SNA Applications on Different Platforms . . . 381
Chaining Gateways to Connect Multiple SNA and IP Networks . . . 382
5250 Emulation over a TCP/IP Network . . . 383
APPC3270 Emulation over a TCP/IP Network . . . 383
3270 Emulation via DLUR over a TCP/IP Network . . . 384
3270 Emulation over a TCP/IP Network via an SNA Gateway to a VTAM Host on an SNA Network . . . 384
3270 Emulation over a TCP/IP Network via an SNA Gateway to a VTAM Host on an APPN Network . . . 385
3270 Emulation via an SNA Gateway over a TCP/IP Network . . . 386
How Does SNA over TCP/IP Work? . . . 386
Mapping SNA Resources to IP Addresses . . . 387
Defining Domain Names and IP Addresses . . . 388
Defining Unique CP Names and Connection Network Names . . . 389
Setting and Modifying the Routing Preference Protocol . . . 390

Appendix C. AnyNet Sockets over SNA . . . 393
AnyNet Sockets over SNA Access Node . . . 393
Socket Applications Communicating over an SNA Network . . . 393
Connecting Sockets over SNA Access Nodes on Different Operating Systems . . . 393
Connecting Remote TCP/IP Networks Using an SNA Backbone and Sockets over SNA Gateways . . . 395
How Does Sockets over SNA Work? . . . 395
Generating an LU 6.2 Call from a Socket Call . . . 397
Mapping an IP Address to an SNA Network-Qualified Name . . . 397
Application Program Support Provided by Sockets over SNA . . . 397
Planning for Sockets over SNA . . . 397
Routing and Mapping Overview . . . 397
Internet Addressing . . . 398
IP Routing Table . . . 399
SNA Network ID Used by Sockets over SNA . . . 399
How an IP Address Is Mapped to an LU Name . . . 399
How Sockets over SNA Routes and Maps Data . . . 399
Defining Sockets over SNA Modes . . . 400
Changing the Idle-Timeout Interval . . . 401

Appendix D. Using InstallShield Silent . . . 403

Setting Up InstallShield Silent . . . 403
Usage Examples . . . 403
Usage Notes . . . 404
Modifying the Samples . . . 404
Debugging Silent Installation Problems . . . 405
InstallShield Problems . . . 405
Common Problems . . . 406

Appendix E. Bidirectional Language Support (Arabic and Hebrew) . . . 407
Considerations for Printing . . . 407
Bidirectional Arabic Support . . . 407
Limitations . . . 407
Installation Tips . . . 407
Bidirectional Keyboard Functions for PC/3270 . . . 408
Arabic Character Shape Selection Functions . . . 410
Personal Communications AS/400 . . . 411
Operator Information Area Indicators . . . 412
Bidirectional Hebrew Support . . . 413
Hebrew and Bidirectional Functions . . . 413
Bidirectional Key-Combinations Table for PC/3270 . . . 415
Operator Information Area (OIA) in Terminal Emulation Mode . . . 415
Keyboard Layout . . . 416
Configuration . . . 416
Font . . . 417
File Transfer With the 862 Codepage . . . 417
Bidirectional Key-Combinations Table for PC/5250 . . . 417

Appendix F. Deleting Unnecessary Files . . . 419
Important Notes . . . 419
Emulator Utilities . . . 419
Administration Tools . . . 419
Other Tools . . . 420
Link Utility . . . 420
Information . . . 420
Links . . . 420

Appendix G. Hints and Tips . . . 423
Usage Notes for Sessions in OLE Documents . . . 423
Changing Fonts . . . 423
Initial Selection of Font . . . 423
WordPad . . . 423
WordPro . . . 423
5 Updating Linked Files . . . 424
Inactivity Timeout for Communications Links . . . 424
Panel Sizes in NT 3.51 . . . 424

Appendix H. ODBC Drivers and Database Access Utility . . . 425
Overview of Open Database Connectivity (ODBC) . . . 425
Components of ODBC . . . 425
Messages from ODBC . . . 427
Considerations for Microsoft Access . . . 428
5 Considerations for Lotus Approach . . . 428
Database Access Utility . . . 428
How to Access an ODBC Data Source . . . 428

Database Size Limit 430
Further Information 430
Personal Communications ODBC Drivers 430
Information Common to AS/400 and MVS ODBC Drivers 431
Information Specific to the AS/400 ODBC Driver 433
Information Specific to the MVS ODBC Driver 436

Appendix I. Remote Installation and Uninstallation of Personal Communications 439
General Information 439
Installation 439
Uninstallation 439
Preparing for Remote Silent Installation of Personal Communications 440
Remote Installation of Personal Communications Using SMS 440
Creating a new SMS software package 440
Creating an SMS Job 441
Remote Uninstallation of Personal Communications using SMS 441
Modify the Personal Communications SMS software package. 442
Create an SMS Job to uninstall Personal Communications. 442
Generic Remote Uninstallation Information for Personal Communications . . 443

Appendix J. Network Drives (Shared Folders) 445
Extension List 445
Cache Size 445
Example of Extension List and Cache Size 445

Appendix K. Notices 447

Appendix L. Trademarks 449

Glossary 451

Index 483

Figures

1. Type-1 APL Keyboard . . . 126
2. Type-2 APL Keyboard . . . 126
3. Type-3 APL Keyboard . . . 126
4. Type-4 APL Keyboard . . . 127
5. Common Control Code of Keyboard Core Segment for Non-Japanese Keyboard . . . 127
6. Common Control Code of Keyboard Core Segment for Japanese Keyboard . . . 128
7. Other Control Code Map of Key Segment B . . . 128
8. Control-Code Map of Keyboard Core Segment for U.S. Enhanced Keyboard . . . 129
9. VM/CMS SEND Command Syntax . . . 148
10. VM/CMS RECEIVE Command Syntax . . . 152
11. MVS/TSO SEND Command Syntax . . . 155
12. MVS/TSO RECEIVE Command Syntax . . . 160
13. CICS SEND Command Syntax . . . 164
14. CICS RECEIVE Command Syntax . . . 167
15. A Session between Two LUs . . . 377
16. A Conversation between Two TPs . . . 378
17. Parallel Sessions between LUs . . . 379
18. Running APPC or CPI-C Applications over a TCP/IP Network . . . 381
19. Using AnyNet to Connect SNA Applications on Different Platforms . . . 382
20. Chaining Multiple Gateways to Connect Multiple IP Networks . . . 383
21. 5250 Emulation over a TCP/IP Network . . . 383
22. APPC3270 Emulation over a TCP/IP Network . . . 384
23. 3270 Emulation via DLUR over a TCP/IP Network . . . 384
24. 3270 Emulation over a TCP/IP Network via an SNA Gateway to a VTAM Host on an SNA Network . . . 385
25. 3270 Emulation over a TCP/IP Network via an SNA Gateway to a VTAM Host on an APPN Network . . . 385
26. 3270 Emulation via an SNA Gateway over a TCP/IP Network . . . 386
27. Structure of SNA over TCP/IP for Personal Communications . . . 387
28. Formats of the Domain Names That SNA over TCP/IP Builds . . . 388
29. Defining a CP Name and a Connection Network Name . . . 390
30. Sockets Applications Communicating over an SNA Network . . . 393
31. Socket Applications on Multiple Operating Systems Communicating over an SNA Network . . . 394
32. Socket Applications Communicating through Multiple Sockets Gateways 395
33. Structure of a Windows NT Node Running Sockets over SNA . . . 396
34. Structure of a Windows 95 Node Running Sockets over SNA . . . 396
35. Example of an IP Routing Panel . . . 400
36. Example of a Language Statement . . . 459
37. Example of an NCP Definition Statement . . . 460
38. Example of a VTAM Definition Statement . . . 460

© Copyright IBM Corp. 1989, 1997

Tables

1. Print Control Parameters (Text) . . . 25
2. Print-Control Options . . . 26
3. Print Control (PC400 Only) . . . 28
4. Page Control (PC400 Only) . . . 28
5. Form Settings (PC400 Only) . . . 28
6. Print Control Parameters - Graphics (PC/3270 Only) . . . 29
7. Mode Values for File Transfer Options . . . 36
8. Transfer File Options (3270 Only) . . . 36
9. Supported Keyboard Types . . . 53
10. Keyboard Country ID and Shift Support . . . 54
11. Code Pages and Character Sets . . . 55
12. Japanese Code Pages and Character Sets (for 3270) . . . 56
13. Japanese Code Pages and Character Sets (for 5250) . . . 57
14. Hangeul and Chinese Code Pages and Character Sets (for 3270 and 5250) . . . 57
15. The IBM Japanese Character Set and IBM Kanji Codes . . . 86
16. User-Font Area . . . 87
17. User-Font Area . . . 88
18. IBM Traditional Chinese Host Code . . . 88
19. IBM Simplified Chinese Character Set, GBK Code . . . 88
20. IBM Hangeul Host Code . . . 89
21. Color Mixes . . . 139
22. 3270 Data Stream Commands . . . 140
23. 3270 Data Stream Orders . . . 140
24. 3270 Data Stream Control Codes . . . 141
25. Supported SCS Control Codes . . . 141
26. Begin/End of File Query Reply Format . . . 143
27. Begin/End of File Structured Field Format . . . 143
28. Field Names of PDF Files . . . 203
29. Effective Values for PDF File Field Names . . . 207
30. Printer Control Code Parameters . . . 209
31. Printer Symbol Definitions . . . 209
32. Supported Control Codes . . . 212
33. SCS Commands Mapped to Printer Commands . . . 214
34. SCD GFID Values . . . 219
35. SGF GFID Values . . . 219
36. PDF File Name . . . 221
37. Migration from the Printer Function Table to the Printer Definition File . . . 221
38. Meanings of Field Attribute Codes . . . 249
39. File-Type Indicators . . . 295
40. Time Formats . . . 296
41. Time Separators . . . 296
42. Date Formats . . . 297
43. Date Separators . . . 297
44. Decimal Separators . . . 297
45. Data Type Indicators . . . 298
46. Valid SBCS Data Types for File Types . . . 299
47. Allowable Data Length Limits for Personal Computer SBCS Data Types 300
48. Allowable Data Length Limits for AS/400 Data Types . . . 301
49. Binary-to-ASCII Field Length Mapping . . . 307

© Copyright IBM Corp. 1989, 1997

50. IP Address Masks Supported by Sockets over SNA 398

About This Book

This book provides information for using IBM Personal Communications AS/400 for Windows** NT and Windows 95 (hereafter called PC400) and IBM Personal Communications AS/400 and 3270 for Windows NT and Windows 95. In this book, *Windows* refers to Windows NT and Windows 95. *PC/3270* refers to the 3270 portion of the combined package. Throughout this book, *workstation* refers to all supported personal computers. When only one model or architecture of the personal computer is referred to, only that type is specified.

Who Should Read This Book

This book is intended for the person who installs and uses Personal Communications on a workstation.

How to Use This Book

This book contains reference information that you might need to refer to when installing or operating Personal Communications.

Personal Communications is designed to use various communication adapters and to work with other workstation and host system software. Refer to the appropriate documentation for the products you use.

Organization

This book has four parts divided into the following chapters:

Part 1: General Information

Chapter 1, Personal Communications Highlights, describes the functions of Personal Communications.
Chapter 2, Where to Find More Information, describes where to find more information.
Chapter 3, Problem Determination and Reporting, describes how to diagnose problems and how to report problems to IBM.
Chapter 4, Printing, describes how to set up printers.
Chapter 5, Transferring Files, describes how to transfer files between a host system and a workstation.
Chapter 6, SNA Node Operations, describes how to perform SNA node operations.
Chapter 7, Country Codes, Code Pages, and Character Sets, describes the country codes, code pages and character sets supported by Personal Communications.
Chapter 8, Keyboard Layouts, describes the keyboards supported by Personal Communications.
Chapter 9, Alerts, explains alerts generated by Personal Communications, along with the corresponding messages.

Part 2: Personal Communications/3270

© Copyright IBM Corp. 1989, 1997

Chapter 10, Building a Printer Definition Table (PDT) for PC/3270, explains how to create and change the printer definition table (PDT) used for PC/3270.
Chapter 11, File Transfer Commands for PC/3270, explains file transfer for PC/3270.
Chapter 12, Considerations for the Use of PC/3270 Sessions, provides technical information, considerations, and restrictions for PC/3270.

Part 3: Personal Communications AS/400

Chapter 13, Building a Printer Definition Table (PDT) for PC400, explains how to create and change the printer definition table (PDT) used for PC400.
Chapter 14, Field Attribute Codes, describes field attribute codes.
Chapter 15, Data Transfer for PC400, explains file description files and data conversion for the PC400 data transfer facility.
Chapter 16, File Transfer for PC400, explains file transfer for PC400.
Chapter 17, Considerations for the Use of PC400 Sessions, provides technical information, considerations, and restrictions for PC400.
Chapter 18, Displaying Grid Lines (DBCS Only), provides information for DBCS workstations on displaying grid lines.

Part 4: Personal Communications VT

Chapter 19, VT Emulation, provides information on using Personal Communications to emulate a VT terminal.
Chapter 20, ASCII Host File Transfer, explains methods for transferring files to and from an ASCII host.

Part 5: Appendixes

Appendix A, SNA Client/Server Concepts, provides some concepts for operating in a client/server environment.
Appendix B, Introducing AnyNet SNA over TCP/IP, provides introductory and planning information for using IBM AnyNet.
Appendix C, AnyNet Sockets over SNA, explains how to configure Sockets over SNA.
Appendix D, Using InstallShield Silent, provides details for using InstallShield Silent.
Appendix E, Bidirectional Language Support (Arabic and Hebrew), provides information on bidirectional language support in Personal Communications.
Appendix F, Deleting Unnecessary Files, explains how to delete unnecessary Personal Communications files.
Appendix G, Hints and Tips, describes hints and tips for setting up Personal Communications links.
Appendix H, ODBC Drivers and Database Access Utility, explains Open Database Connectivity.
Appendix I, Remote Installation and Uninstallation of Personal Communications, explains remote silent installation and uninstallation.
Appendix J, Network Drives (Shared Folders), provides information on configuring network drives.

This book also contains a glossary and an index.

Highlighting Conventions

This book uses the following highlighting conventions:

UPPERCASE	Uppercase type indicates commands, program keywords, and default values. You can enter these values in uppercase or lowercase.
Bold	Bold type indicates the names of window controls, such as lists, check boxes, entry fields, menu choices, and push buttons.
Italics	Italics indicate: Special emphasis in text or a reference citation. Variables that you supply a value for.
Example type	Example type indicates information that the user is instructed to type at a command prompt or in a window.

Command Syntax Symbols

Parentheses, brackets, ellipses, and slashes have the following meanings or uses:

( )	Parentheses enclose operands that govern the action of certain command options.
[ ]	Brackets indicate an optional command argument. If you do not use the optional item, the program selects a default.
...	Ellipsis after an argument indicates that you can repeat the preceding item any number of times.
/	For 3270, a slash must precede the Time Sharing Option Extensions (TSO/E) password. A slash must also precede parameters of DOS commands entered from the command line. For 5250, a slash must precede parameters of IBM DOS commands entered from the command line.
\	A backslash is included as part of any directory name. An initial backslash indicates the first-level directory, and an additional backslash is inserted in the directory name to indicate another level.

All directives, operands, and other syntax are typed in uppercase or lowercase, unless otherwise indicated.

Part 1. General Information

© Copyright IBM Corp. 1989, 1997

Chapter 1. Personal Communications Highlights

Personal Communications V4.2 provides two different CD-ROM package options. The packages are:

1. A CD-ROM (V4.2) containing *IBM eNetwork Personal Communications for Windows 95 and Windows NT*, which provides 5250, 3270, and VT emulation and connections to AS/400 and ASCII host systems.
2. A CD-ROM (V4.2) containing *IBM eNetwork Personal Communications AS/400 for Windows 95 and Windows NT*, which provides 5250 and VT emulation and connections to Application System/400 (AS/400) and ASCII host systems.

The information in this book applies to both packages, except where indicated otherwise.

Personal Communications brings the power of personal networking to your workstation by providing a variety of connectivity options supporting local area network (LAN) and wide area network (WAN) environments. Whether you need host terminal emulation, client/server applications, or connectivity, Personal Communications offers a robust set of communications, networking, and administrative features.

Personal Communications is a full-function emulator package with an easy-to-use graphical interface, which includes many useful features such as file transfer and dynamic configuration, all in the Windows environment. PC400 also provides support for data transfer.

Personal Communications also provides a variety of SNA-based client application programming interfaces (APIs). You can create applications that use the peer-to-peer client APIs, which are based on LU 6.2 (and provided by Personal Communications). These APIs let you simultaneously access and process information on peer workstations.

With Personal Communications, you can participate in Advanced-Peer-to-Peer Networks (APPN) as an end node, and use the advanced network features, high performance routing (HPR) and dependent LU requester (DLUR).

Personal Communications provides the following functions:

System/390 Connections

LAN	LAN via IEEE 802.2
	LAN via NetWare** for SAA (IPX/SPX)
	Telnet3270 (TN3270)
	3270 via AS/400 (passthru)
	APPC3270 via LAN
	Windows NT** client (using the FMI interface)
	Windows NT client (using the LUA interface)
	Windows NT client (using the APPC network interface)
	Dependent Logical Unit Requester (DLUR)
	VT over Telnet (TCP/IP)
COAX	SNA Distributed Function Terminal
	Non-SNA Distributed Function Terminal
	3174 Peer Communication

© Copyright IBM Corp. 1989, 1997

Highlights

COM port
- SNA-over-Async
- IBM Global Network (SBCS only)
- Home3270
- Advantis (IIN)
- Dependent Logical Unit Requester (DLUR)
- Hayes AutoSync
- APPC 3270
- VT over Async
- VT over Telnet (TCP/IP)
- X.25 Hayes AutoSync
- X.25 DLUR via Hayes AutoSync
- X.25 APPC3270 via Hayes AutoSync

SDLC
- Synchronous Data Link Control
- 3270 via AS/400 (passthru)
- APPC3270 via SDLC
- Dependent Logical Unit Requester (DLUR)

5250
- 3270 via AS/400 (passthru twinax)
- Dependent Logical Unit Requester (DLUR)

AnyNet SNA over TCP/IP
- LU 0, 1, 2, 3
- APPC3270
- LU 0, 1, 2, 3 via DLUR

IBM WAC
- Synchronous Data Link Control
- 3270 via AS/400 (passthru)
- APPC3270 via SDLC
- Dependent Logical Unit Requester (DLUR)
- X.25 Qualified Logical Link Control
- X.25 3270 via AS/400
- APPC3270 via X.25
- X.25 DLUR

API Client
- NetWare for SAA Client
- Communications Server Client
- Communications Server

OEM
- Synchronous Data Link Control
- 3270 via AS/400 (passthru)
- APPC3270 via SDLC
- Dependent LU Requester (DLUR)

AS/400 Connections

LAN
- LAN via IEEE 802.2
- Telnet5250 (TCP/IP)
- Telnet5250 (IPX/SPX)
- VT over Telnet
- Microsoft SNA client (using the APPC network interface)

SDLC
- Synchronous Data Link Control (MPA)

5250
- Twinaxial Data Link Control (APPC)
- Twinaxial Data Link Control (Console)

COM port
- SNA-over-Async
- SNA-over-Async (console)
- Hayes AutoSync

VT over Async
VT over Telnet (TCP/IP)
X.25 Hayes AutoSync

AnyNet SNA over TCP/IP
APPC5250

IBM WAC
Synchronous Data Link Control (WAC)

API Client
NetWare for SAA Client
Communications Server client
Communications Server

OEM Synchronous Data Link Control (MPA)

ASCII Emulator Connections

LAN VT over Telnet

COM port
VT-over-Async
VT over Telnet (TCP/IP)

S/3X Emulator Connections

5250 Twinaxial Data Link Control (APPC)

Client/Server Connections

LAN LAN via IEEE 802.2

Twinaxial
Twinaxial Data Link Control (APPC)

COM port
SNA-over-Async
Hayes AutoSync
X.25

SDLC Synchronous Data Link Control

IBM WAC
Synchronous Data Link Control
X.25

AnyNet SNA over TCP/IP
APPC

Configuration of SNA Node (APPN) Sessions

- Emulator
- Client/server applications

SNA Node Operations

- Starting and stopping resources
- Deleting resources
- Displaying resource information
- Changing session limits
- Initiation of path switches

Log Viewer

Trace Capability

- 3270/5250 emulator data
- APPN and APPC API data
- Connectivity data, such as LAN or SDLC
- User services data, such as node initialization

Highlights

APPC Applets

- Display SNA sense data (GETSENSE)
- Transfer files (AFTP and AFTPD)
- Check connection (APING)

Sample Programs

- Located in \Personal Communications\samples subdirectory

Installation and Configuration

- Partial installation option
- Program sharing on a network server
- Automatic detection of installed communication adapters
- Dynamic change of communication configurations
- Automatic Dial Facility (Async (IGN, IIN), SDLC, Home3270, SNA-A)
- Silent Installation
- ASCII SNA-node configuration
- Verification of ASCII configuration

OEM Adaptor Cards

An open API enables vendors and Other Equipment Manufacturers (OEMs) to provide adapter cards that allow for additional connectivity options, for example, additional X.25, ISDN, SDLC or twinax support.

Migration

- Migration from Personal Communications for Windows V3.0 or later

Host Session Function

- Up to 26 sessions
- Variable screen size and automatic font scaling
- Function settings (of the host code page, for example) for each session

Host Graphics Support

- Built-in vector graphics support for GDDM and other graphics applications

File Transfer Function

- Easy operation through graphical user interface (GUI) windows
- Batch transfer of multiple files
- Concurrent file transfer through multiple sessions
- Background file transfer
- File transfer invocation by macro
- OfficeVision/MVS Import/Export functions
- VT File Transfer

Edit (Cut and Paste) Function

You can use the clipboard to cut, copy, and paste a selected area. In addition, you can paste data in other applications, such as spreadsheet programs, that support the PasteLink function.

- Support of spreadsheet data format (Sylk, Biff3, Wk3 formats)
- Copy Append
- Paste Next
- Paste to Trim Rectangle
- Paste Stop at Protected Line

Graphical User Interface (GUI)

- Customizable 3D iconic tool bar
- 3D-button hotspots
- Pop-up keypad
- Macro function, including record and play
- Keyboard-function setup and remapping
- Mouse-button-function setup and remapping
- Display setup (cursor type, graphics, sound, colors, for example)
- Automatic font size adjustment or fixed font size
- Window-appearance setup
- Menu-bar customization
- 3270 Light Pen emulation by using a mouse
- Online help

Print Function

- Printer session (for PC/3270: SCS, LU 3, or non-SNA)
- Graphics local print
- Printing with the Windows NT printer drivers
- Print function by printer definition table (PDT)
- Multiple host-print functions in multiple sessions
- Print-job control by SNA bracket timeout
- PDF-to-PDT conversion tool
- PC400 print function by OS/400 Host Print Transform (HPT)
- PC400 printing supported by the AS/400 Advanced Print Support Utility
- ZipPrint

Programming Interfaces

- 16/32-bit Emulator High-Level Language Application Programming Interface (EHLLAPI)
- 16/32-bit Dynamic Data Exchange (DDE)
- 32-bit Node Operations Facility (NOF)
- 16/32-bit Personal Communications API (PCSAPI)
- 32-bit Advanced Program-to-Program Communication (APPC)
- 32-bit Common Programming Interface for Communications (CPI-C)
- 32-bit Automation Object API
- 32-bit ActiveX/OLE 2.0

PC400 Client Function

- Data transfer
- PC Organizer
- Text Assist
- Enhanced Programmable Terminal User Interface (ENPTUI)

Highlights

Chapter 2. Where to Find More Information

This chapter discusses getting help when you are installing, configuring, or using Personal Communications.

Online Help

This help facility describes how to install, configure, and use Personal Communications. Online help is very extensive and includes information about every aspect of configuring and using Personal Communications.

Use help to obtain the following information:

- Menu choices
- Operation procedures
- Operations in windows
- Meanings of the terms displayed in windows
- Causes of errors and the corresponding actions to take
- Mouse-based operations
- Operation without a mouse
- Detailed explanations of specific terms
- Further technical information about Personal Communications
- Detailed explanations of operator information area (OIA) messages

How to Use Online Help

To display online help, select choices from the Help pull-down menu or press **F1**.

You can use Personal Communications online help just as you use the online help for Windows.

Messages and Alerts

Online messages are displayed by Personal Communications, but a message does not always mean an error occurred. For example, a message might tell you that an operation is in progress or has been completed. A message can also prompt you to wait for the completion of an operation.

System-Fault Messages That Appear in Pop-Up Windows

For Windows NT 4.0, If a message does appear in a pop-up window, you can paste its contents into the Windows NT clipboard. To do this:

1. Click **Details** on the pop-up window.
2. Mark the text that you want to copy.
3. Click the marked text with the right mouse button and then click **Copy**.
4. Start an editor, such as Notepad, and click **Paste** from the Edit pull-down menu.
5. Save the file in case an IBM Service Representative needs this information to diagnose your problem.

© Copyright IBM Corp. 1989, 1997

OIA Messages

Personal Communications displays messages in the operator information area (OIA) or in a pop-up window. Messages from Personal Communications are displayed in the message window; messages from the host system regarding the condition of the session are displayed in the OIA of the session window.

The OIA is the bottom line of the session window. An OIA message indicates the status of Personal Communications as well as information about the workstation, host system, and attachment method.

All of the OIA indicators, reminders, and messages are described in the online help. To view this information:

1. Select **Index** from the Help pull-down menu.
2. Select **The operator information area messages**.

   To look up a specific OIA message, select **Search**. When the Search dialog box appears, type the letters that appear in the OIA. For example, MACH or PROG. If a lightning bolt appears, type COMM.
3. Double-click the index entry that matches your search.
4. Scroll through the dialog box until you find the number that appears in your OIA.

Alerts

Alerts may be generated which correspond to specific Personal Communications messages. See Chapter 9, “Alerts” on page 131 for more information.

Personal Communications Library

The Personal Communications library includes the following publications:

IBM eNetwork Personal Communications Quick Beginnings, GC31-8476-00
IBM eNetwork Personal Communications Access Feature, SC31-8526-00
IBM eNetwork Personal Communications Reference, SC31-8477-00
IBM eNetwork Personal Communications Emulator Programming, SC31-8478-00
IBM eNetwork Personal Communications Client/Server Communications Programming, SC31-8479-00
IBM eNetwork Personal Communications System Management Programming, SC31-8380-00
IBM eNetwork CM Mouse Support User's Guide and Reference
IBM eNetwork Personal Communications Host Access Class Library, SC31-8527-00

These books are also available (except in DBCS versions) in Bookmanager format and are optionally installed.

Chapter 3. Problem Determination and Reporting

This chapter describes the information that will help you to solve a problem yourself, to recognize a problem accurately before reporting it to your system administrator, or to report a problem to IBM.

These are the processes that you should follow:

1. Problem determination (PD)
2. Problem-source identification (PSI)
3. Viewing message logs
4. Obtaining trace data
5. Problem reporting (PR)

Problem Determination (PD)

Problem determination (PD) is the first stage in solving your problem.

Symptoms

Recognize the differences between what you expect to see and what you do see.

Environment

Recognize the environment in which the problem occurs:

Personal Communications configuration

- Personal Communications version and CSD level
- The name of the workstation profile
- The name of the SNA Node configuration file

Workstation configuration

- The machine type and model, the system memory, the video adapter
- The communication adapter you are using
- Other adapters (especially communication adapters) installed
- The printer type and model
- Other devices installed, such as sound cards, modems, or fax machines

Software configuration

- Windows version and level
- Communication device-driver version and level
- Other communication programs (such as Netware, Microsoft SNA Server, or Microsoft Data Link Control) that are running and using resources
- Printer driver version and level.

Host configuration

- The upstream host connection and configuration

© Copyright IBM Corp. 1989, 1997

Problem Type

Categorize your problem into one of the following types:

1. **Installation Problem**. Note the error message and take the required action by consulting the online help.
2. **Configuration or Setup Problem**. If Personal Communications did not connect to the host (that is, if the host screen did not appear) verify that your hardware, software, and Personal Communications configurations are correctly set up for your host environment. To help you to isolate what is wrong, look up any OIA messages or error messages in the online help. You might also need to ask your system administrator to verify that your Personal Communications setup values are correctly configured for your host system.
3. **Operational Problem**. Although you were able to connect to the host, you might have difficulty in doing some operations or in using a certain Personal Communications function. Look up any OIA or error messages in the online help, and study *Up and Running* and this manual to see how the operation should be performed.

Problem Area

You also need to identify where the problem is:

1. Installation and configuration
2. Printer
3. API
4. Other Personal Communications functional area

Problem Re-Creation

As the final step of the problem determination process, try to re-create the problem; the problem re-creation procedure and the probability of the recurrence of the problem are key factors in isolating it. If the problem is intermittent, any factor that you think is related to it becomes important information.

Problem-Source Identification (PSI)

The second stage is to try to identify the real cause of the problem; this depends largely on the problem area:

1. **Installation and Configuration**. Make sure that your workstation hardware and software are configured correctly. You might also need to contact your system administrator to verify that your Personal Communications setup values are correct for your host system.
2. **Printer**. Identify the operation you are having the problem with:

   Local print
   Host-directed print (LU 1)
   Host-directed print (LU 2)
   Host-directed print (LU 3)
   Host-directed print (non-SNA)

   Also identify which printer mode you are using:

   PDT mode: Personal Communications-proprietary printer-driver mode
   PD mode: Windows printer-driver mode

Then check that you have installed the correct printer driver and make sure that you have configured the driver appropriately. If you are using PDT mode, check the content of your PDF file, especially if you have customized it. Depending on the problem you are having, you might need to run a link-line trace.

3. **API**. The cause could be in an application that uses an API, or the problem could be in Personal Communications. Identify which of these is causing the problem. The API trace might also help you to identify the source of the problem.
4. **Other Personal Communications Functional Area**. Make sure that you can explain why you think that the source of the problem is in Personal Communications.

Viewing Personal Communications Logs

The Personal Communications log viewer utility enables you to view information contained in a Personal Communications log. You can use the viewer during problem determination to view the messages in the message log. The default name of the message log output file is *PCSMSG*; its file extension must be *.MLG*.

To view messages in a message log:

1. From the Personal Communications Program Group (in Windows NT 3.51) or from the Administrative and PD Aids folder (in Windows NT 4.0), click **Log Viewer**.
2. From the list of logged messages, double-click on a message number to display message help.

Note: If the logger device driver determines that the product kernel driver-generated log is full and cannot log a message, it will create an entry in the Windows log. The information logged may include which log failed, as well as the location and reason for the failure.

Obtaining Trace Data

The Personal Communications trace facility enables you to log trace information for certain Personal Communications functions. This information could be useful in identifying the source of problems by tracing:

3270/5250 emulator data
APPN and APPC API data
Connectivity data, such as LAN (LLC2) or SDLC
User services data, such as node initialization

Note

To obtain trace data on NT SNA Server attachments, use the PCSMON program. See the online help for more information.

To start a trace, perform the following steps:

1. From the Personal Communications Program Group (in Windows NT 3.51) or from the Administrative and PD Aids folder (in Windows NT 4.0), double-click **Trace Facility**. The trace status on the title bar displays the current state:

Active Trace data is being collected by the trace facility.

Inactive No trace data is being collected and the trace facility is not ready to collect data.

2. From the main dialog box, click **Set Up** to set up the desired trace system parameters.
3. Click **OK** to return to the main trace dialog box.
4. From the main trace dialog box, select the type of data you want to trace from the Function Name, Component Name, and Trace Options list boxes.

   Function Name A specific set of Personal Communications features, such as 3270/5250 Emulator or User Services.

   Component Name The name of a specific part of a function, such as API data (for the 3270/5250 Emulator function) or Node Initialization (for the User Services function).

   Trace Options The options associated with a particular component, such as EHLLAPI (for the API component) or API trace (for the Node Initialization component).

   The following table shows the available choices:

Function Name	Component Name	Trace Options
3270/5250/VT Emulator	Communication data	TCP/IP IPX/SPX IBM Global Network (SBCS only) Home3270 SNA DFT Non-SNA DFT Async Console Twinax Console VT over Async
	API	EHLLAPI DDE
	Event	Keystroke
APPN and APPC	NOF API MS API CPI-C API RUI API CSV API APPC API CCE API	**These options apply to all components:** Verb trace only Verb trace (up to 128 bytes of data) Verb trace (full data)
Connectivity	AnyNet	Internal calls Transport provider calls
	LAN (LLC2)	I-frames only trace Truncate to 128 bytes of data All frame trace
	SDLC TDLC LAPB QLLC	**These options apply to all four components:** DLC interface Outbound data Inbound data

Function Name	Component Name	Trace Options
	Node Initialization Configuration API Message Facility SNA Node Operations	
User Services	Automatic Dial Utility	API trace

Note: For the User Services component, the service key field on the SNA Node Operations panel is used to insert a password, which enables you to view additional trace options that you can use when requested by your service representative. Unless you specify a service key password, the Configuration API, Message Facility, SNA Node Operations, and Automatic Dial Facility components are not displayed.

5. Start tracing data by clicking **Start**, or apply changes to the trace options by clicking **Apply**.
6. Run the operation that you want to trace.
7. Optionally, stop the trace by clicking **Stop**.
8. Save the trace data to your hard disk by clicking **Save**.
9. Click **Format** to specify a formatted trace file name and to format the trace data. Click **OK**.
10. Click **Clear** to clear the trace buffer where you saved a trace.

Problem Reporting (PR)

If your problem still persists even at this stage, and if you think that the source is in Personal Communications, report the problem to IBM.

When you do this, you need to provide the information you obtained through the problem determination (PD) and problem-source identification (PSI) processes:

1. PD information includes:

   Symptoms
   Environment
   Type of problem
   Problem area
   Problem re-creatability and re-creation procedure

2. PSI information includes:

   OIA messages or error messages (if any)

   Key factors related to the problem

   Output from Trace facility

   Message log

   Data in the **PRIVATE** subdirectory, such as **.WS**, **.kmp**, and **.bch** files

   PDF file (for printer problems in PDT mode)

   Spool file (for printer problems)

Contacting IBM

This section lists a number of ways you can reach IBM for various reasons. Depending on the nature of your problem or concern, we will ask you to be prepared to provide us with some information to allow us to serve you better.

If you have a technical problem, please take the time to review and carry out the actions suggested here. Use your local support personnel before contacting IBM. Only persons with in-depth knowledge of the problem should contact IBM; therefore, support personnel should act as the interface with IBM.

If you determine that you need to contact IBM, the following section describes the services IBM provides.

Note: The service information in this section may not be applicable to countries outside the U.S.

Statement of Service

IBM provides defect support through Program Services. A defect related problem means the program does not conform to specifications and could be either a code or documentation error.

For information on how you can access Program Services or other fee-based support services:

1. In the U.S.A., contact the Project Office at 800-799-7765. Hours of operation are from 8:00 a.m. to 5:00 p.m. Eastern Time, Monday through Friday, except national holidays.
2. In Hong Kong, please contact the Customer Relationship Center (CRC) at 2825-7878. Hours of operation are from 9:00 a.m. to 5:00 p.m., except national holidays.
3. In Korea, please contact Single Point Of Entry (SPOE) at 02-781-7114 or 080-023-8080 for information on how you can access Program Service or Other Support Services in Korea. Hours of operation are from 9:00 a.m. to 6:00 p.m. on weekdays, except national holidays.
4. In Taiwan, please contact the Customer Relationship Center (CRC) at (02) 776-7878. Hours of operation are from 9:00 a.m. to 5:00 p.m., except national holidays.
5.

   Other countries are in the following table:

Country	Phone Code	Number, with (0) used inside the country
France	33	(0)2.38.55.77.77
Germany	49	(0)180-55090
Italy	39	167-017001
UK	44	(0)1705-492949 and ask for express services
Austria	43	(0)222/21145-2500
Belgium	32	(0)2-2252525
Ireland	353	(0)1 850205205
Netherlands	31	(0)20-5135151
Sweden	46	(0)20 96 75 83
Norway	47	66 99 90 90
Denmark	45	4593 4545
Finland	358	9800 42680
Spain	34	901-100 400
Turkey	90	212-2800900
Portugal	351	1 7915977
Israel	972	(0)3-6978555
Greece	30	(0)1-6801700
South Africa	27	(0)800 130130
Switzerland	41	155 1225

The terms and conditions for the technical support described in this guide are subject to change.

Reporting Defects

Customers can report code-related problems to IBM electronically, via fax, or through U.S. mail. IBM will respond in the same media as the customer inquiry. IBM will respond to customer inquiries within a maximum of 2 business days of electronic or facsimile receipt, and 7 days of mail receipt advising of the problem disposition.

In Taiwan, call the S/W Service Hotline at (02) 776-7654 or 080-21-1213. Hours of operation are from 9:00 Created by ActiveSystems 12/29/96 Entity not defined. 5:00, except national holidays.

In Hong Kong, call the Australia WSC Hotline at 61-2-354-4002 if you have a SupportLine contract with IBM.

In China, call the S/W Service Hotline at 010-6261-6677.

If the problem reported is not known to be a code-related problem, the customer will be informed that IBM will continue to work on it for a fee if the customer does not have a support contract. If the problem is determined to be caused by an error in IBM code, the fee will be waived.

Submitting Defects by FAX

To fax a potential defect to IBM:

In the U.S.A.,

1. Call 1-800-992-4777 to have a fax submission form sent to your fax machine. Follow the prompts to select the correct options. Fill out the form and fully describe your problem.
2. Fax the completed defect report to:

   800-426-8602

   Be sure to include your fax number for a response.

In Taiwan,

1. Fully describe your problem and fax to 02-773-7314.
2. Be sure to include your fax number for a response.

In Korea, fully describe your problem and fax to 02-781-7774.

Submitting Defects by Mail

To mail a potential defect to IBM:

1. Fully describe your problem
2. Mail the completed defect report to:

   IBM CORPORATION
   PERSONAL SYSTEMS SUPPORT FAMILY
   11400 BURNET ROAD
   INTERNAL ZIP 2901
   AUSTIN, TEXAS 78728

Be sure to include your return address for a response.

Submitting Defects Electronically

IBM will accept potential defect reports submitted using the Internet, TalkLink, or Compuserve. Included here for convenience are the steps to access electronic customer support:

TalkLink via IBMLink: The Personal Communications AS/400 and 3270 products are supported via the OS2BBS1 section of the IBMLink service.

1. Access the OS2BBS1 section via an IBMLink Main Menu.
2. Select **IBMSupt - IBM PS Defect Submission, CSD Order, &; Info Library**.
3. Select **PROBrpt - Submit an ETR (Defect Submission)**.
4. Select **OTHERProb - PS Supportline - Other IBM Software Products Def. Menu**.
5. Select **J-p - PS Supportline - IBM software products J to P Menu**.
6. Then select the Personal Communications product in the displayed list (there are various versions and titles displayed, please choose the one that best describes your product)

A temporary reporting number will be displayed at the bottom of the screen. Record this number until a permanent Problem Management Record (PMR) number is assigned to your defect reported.

Also available in the U.S. is access to the PCOMM CFORUM on TalkLink. If you do not have access to TalkLink, call 1-800-547-1283 (U.S.A. only). TalkLink

administration personnel will send you a registration package that lists the available features and the current subscription rates. You should receive the registration package approximately two weeks after calling. Return the necessary documents and TalkLink administration personnel will send you a welcome package that contains the software you need to access TalkLink.

The Internet: To submit a software defect report for a Personal Systems Support Family product, use an internet browser and go to URL:

http://ps.software.ibm.com

Then choose **Technical Assistance**. Please note that a customer number and a special personal identification number (PIN) are required to access this service. You can call 1-800-992-4777 to receive your customer number and PIN (tell the customer support representative that you need the customer number and PIN for reporting a defect via the Internet).

Some service fixes and other miscellaneous product information files are located at the following FTP locations:

service.boulder.ibm.com/ps/products/pc3270
service.boulder.ibm.com/ps/products/pc400
service.boulder.ibm.com/ps/products/pctlkit
service.boulder.ibm.com/ps/products/nswin
service.boulder.ibm.com/ps/products/anynet

CompuServe: To report a suspected defect in a product in the Personal Systems Support Family via CompuServe:

1. From the CompuServe Main Menu, GO OS2SUPPORT.
2. In the Library called IBM Files (library 23), download the file PROBLM.TXT.
3. Fill in the appropriate sections of the form contained in PROBLM.TXT (some sections are specific to OS/2 and OS/2-related problems). Please complete the form as completely as possible for your specific operating environment.
4. Using CompuServe E-mail, send this completed form to the address: 76711,611

IBM will reply via CompuServe mail to each PROBLM.TXT defect report received. The reply will include a Problem Management Record (PMR) number. This number is used by IBM to track each unique problem reported by each customer. The IBM reply will also include any other information necessary for the situation.

Other Ways to Contact IBM

Information about Personal Communications is available from the following sources:

The PCOMM CFORUM

This forum is monitored by Personal Communications users and, when possible, by Personal Communications developers.

– In the U.S., access the PCOMM CFORUM on the OS2BBS bulletin board via TalkLink.

  If you do not have access to TalkLink/OS2BBS, call 1-800-547-1283 (U.S.A. only). TalkLink administration personnel will send you a registration package that lists the available features and the current subscription rates.

You should receive the registration package approximately 2 weeks after calling. Return the necessary documents and TalkLink administration personnel will send you a welcome package that contains the software you need to access TalkLink/OS2BBS.

IBMLink customers can register via SMARTLink's new TalkLink selection.

- In Canada, access the PCOMM CFORUM via IBMLink.
- In Australia, to access the PCOMM CFORUM:
  1. Type NEWMENU to access the pilot menus.
  2. Select **FORUMS**.
- In Europe, the Middle East, and Africa, use DIAL-IBM to access the PCOMM CFORUM via the CONFER application on OS2BBS.

  If you do not have access to OS2BBS, contact your country DIAL-IBM help desk.

Internet

IBM Networking Software has a home page on the Internet that also has general product information and service information. Using an Internet browser such as IBM WebExplorer, go to the following URL: http://www.raleigh.ibm.com/

IBM Personal Communications Online Customer Support

Access this electronic bulletin board to view information APARs and to obtain APAR fixes. To request that an APAR fix be made available, either leave a message for SYSOP on the bulletin board or call 1-800-992-4777 (U.S.A. only).

To access the electronic bulletin board:

- Dial 919-543-8200 (country code: 001 from outside the U.S.A.).
- Use protocol N81.
- Follow the instructions. Entering your first name and last name registers you the first time you use the facility.

The IBM Software Solutions Center

From the U.S.A., call 800-992-4777. From Canada, call 800-465-2222. Outside call IBM International Information at 800-426-1774.

Chapter 4. Printing

You can use Personal Communications to print from display or printer sessions.

From display sessions, you can print all (**Print Screen**) or part (**Trim Print**) of the screen of your session window on a workstation printer. **Trim Print** is not available for PC400 sessions. For more information, refer to *Up and Running* or the online help.

From printer sessions, you can direct printing from an S/390 or AS/400 system to a workstation printer.

Note: When you use a host application which prints to your workstation's LPT1, you must first select the printer in the Printer Setup dialog of the File menu.

Configure a printer session to designate a workstation printer as a system printer that will use either a Windows printer driver or a printer definition table (PDT) provided with Personal Communications.

Use Windows printer drivers for Personal Communications to print files based on printer setup parameters, such as scaling, duplex options, and page orientation, that you define in **Printer Setup**.

Use PDT files for Personal Communications to print files based on printer control information, such as control codes and the printer output format, defined in the PDT. You can customize PDTs to define your own controls, by editing the corresponding PDF and converting it to a PDT.

From a PC/3270 session, you can also use the ZipPrint utility provided in the Emulator Utilities folder to print PROFS or OfficeVision (OV) notes, calendars, documents, CMS files, XEDIT workspaces, and host-session screens. See the online help for more information.

For considerations and restrictions on printing, refer to Chapter 12, “Considerations for the Use of PC/3270 Sessions” on page 171 and Chapter 17, “Considerations for the Use of PC400 Sessions” on page 331.

Setting Up the Printer

Following is a description of how to set up the printer that you want to use, with either a Windows printer driver or a PDT file.

For an explanation of how to customize a PDT, refer to Chapter 10, “Building a Printer Definition Table (PDT) for PC/3270” on page 137 or Chapter 13, “Building a Printer Definition Table (PDT) for PC400” on page 187.

Defining a Printer for a Session

To choose or change the Windows printer driver to be used, follow these steps:

1. Click **File - Printer Setup** in the menu bar of the session window.

   The Printer Setup window lists the available printers.

2. Select the printer to be used from the list box.
3. Confirm that **Use PDT** is not selected.

© Copyright IBM Corp. 1989, 1997

Using PDT Files

To use a PDT file:

1. Click **File - Printer Setup** from the menu bar of the session window.

   The Printer Setup window appears.

2. Click the printer to be used from the list box.
3. Click **Setup**; specify the paper size.
4. Click **OK**.
5. Click the **Use PDT** check box, then **Select PDT**.

   The Select PDT file window appears.

6. To use an existing PDT, select the PDT file to be used; then click **OK**.

   To use a PDF that you have modified, you must first convert it to a PDT. To do so:

   a. Click **Convert PDF**.

   b. Select the PDF file to be converted from the list, then click **Convert**.

      The window displays the result of the conversion. If there are any errors during the conversion, they are listed in the window.

   c. When you select **Save List**, the window list is saved in ***.LST** file in the **PDFPDT** subdirectory.

      To close without saving the list, click **Close**.

      After the file is converted, control returns to the Select PDT file window and the converted PDT file appears in the list.

   d. Select the PDT file; then click **OK**.

7. Click **OK** in the Printer Setup window.

PDT Files

PDT files define the transfer of characters and control codes to a printer, and the printer output format. If a printer definition table (PDT) file is used, the Windows printer driver is not used; instead, Personal Communications generates print outputs based on printer control information defined in the PDT file.

The PDTs provided by Personal Communications and the corresponding printers are listed in the following table.

Note: All PDT files are available in SBCS mode, except for the following:

IBM5577.PDT
IBM5585.PDT
IBM5587.PDT
ESC_P.PDT
LIPS3A4.PDT (3270 only)
LIPS3B4.PDT (3270 only)
ESC_BIG5.PDT
ESC_CNS.PDT
ESC_5550.PDT
ESC_TCA.PDT

KS_JO.PDT
KS_WAN.PDT
KSSM_JO.PDT
KSSM_WAN.PDT

The following PDTs are supported for both 3270 and 5250 sessions:

File Name	Printer Name/Model
IBM5577.PDT	IBM 4208-501, -5C2, -5K2
	IBM 4216-510
	IBM 5572-B02
	IBM 5573-HC2
	IBM 5575-B02, -F02, -H02, BC2, -FK1E
	IBM 5577-B02, -G02, -H02, FC2, -HC2, -KC2,-HK2
	IBM 5579-H02, -KC2
IBM5585.PDT	IBM 5585-H01, -HC1
	IBM 5587-G01
	IBM 5587-H01 (with extended functions)
	IBM 5589-H01
IBM5587.PDT	IBM 5587-G01
	IBM 5587-H01 (without extended functions)
ESC_P.PDT	ESC/P printer for China or Japan
ESC_BIG5.PDT	ESC/P printer with Big5 DBCS code
ESC_CNS.PDT	ESC/P printer with CNS DBCS code
ESC_5550.PDT	ESC/P printer 5550 DBCS code
ESC_TCA.PDT	ESC/P printer with TCA DBCS code
KS_JO.PDT	KS printer with combination code
KS_WAN.PDT	KS printer with completion code
KSSM_JO.PDT	KSSM printer with combination code
KSSM_WAN.PDT	KSSM printer with completion code

The following PDTs are supported for 3270 sessions only:

File Name	Printer Name/Model
IBM3812.PDT	IBM 3812 Page Printer, Model 2
IBM3816.PDT	IBM 3816 Pageprinter II
IBM38521.PDT	IBM 3852 Color Printer
IBM38522.PDT	IBM 3852 Color Jetprinter, Model 2
IBM4019.PDT	IBM 4019 LaserPrinter
	IBM 4019 LaserPrinter E
	IBM 4029 Laser Printer
HPLJII.PDT	HP LaserJet II Series
IBM4072.PDT	IBM 4072 ExecJet Printer
IBM4201.PDT	IBM 4201 Proprinter
	IBM 4201 Proprinter II
	IBM 4201 Proprinter III, Model 3
	IBM 2380 Personal Printer Series 2
IBM4202.PDT	IBM 4202 Proprinter XL, Model 1
	IBM 4202 Proprinter XL, Model 2
	IBM 4202 Proprinter III XL, Model 2
	IBM 4202 Proprinter III XL, Model 3
	IBM 4216 Personal Pageprinter
	IBM 2381 Personal Printer Series 2
IBM4207.PDT	IBM 4207 Proprinter X24
	IBM 4207 Proprinter X24E

	IBM 2390 Personal Printer Series 2
IBM4208.PDT	IBM 4208 Proprinter XL24
	IBM 4208 Proprinter XL24E
	IBM 2391 Personal Printer Series 2
IBM5152.PDT	IBM 5152 Graphics Printer, Model 2
IBM5182.PDT	IBM 5182 Color Printer
IBM5201.PDT	IBM 5201 Quietwriter Printer, Model 1
	IBM 5201 Quietwriter Printer, Model 2
IBM5202.PDT	IBM 5202 Quietwriter III
	IBM 5204 Quietwriter Printer
PRN5216.PDT	IBM 5216 Wheelprinter
IBM5223.PDT	IBM 5223 Wheelprinter E
ACTLZR2.PDT	Epson Action Laser2 LQ2500 mode
BJ300.PDT	Canon BJ300 CAPSL mode
LQ870.PDT	Epson LQ870/1170
LIPS3A4.PDT	
LIPS3B4.PDT	
PRN3812.PDT	IBM 3812 Pageprinter Model 2
	IBM 3816 Pageprinter II
PRN38521.PDT	IBM 3852 Color Printer
PRN38522.PDT	IBM 3852 Color Jetprinter, Model 2
PRN4019.PDT	IBM 4019 LaserPrinter
	IBM 4019 LaserPrinter E
	IBM 4029 Laser Printer
PRN4072.PDT	IBM 4072 ExecJet Printer
PRN4202.PDT	IBM 4201 Proprinter
	IBM 4201 Proprinter II
	IBM 4201 Proprinter III, Model 3
	IBM 4202 Proprinter XL, Model 1
	IBM 4202 Proprinter XL, Model 2
	IBM 4202 Proprinter III XL, Model 2
	IBM 4202 Proprinter III XL, Model 3
	IBM 4207 Proprinter X24
	IBM 4207 Proprinter X24E
	IBM 4208 Proprinter XL24
	IBM 4208 Proprinter XL24E
	IBM 4216 Personal Pageprinter
	IBM 2380, 2381, 2390, 2391 printers
PRN5152.PDT	IBM 5152 Graphics Printer, Model 2
PRN5182.PDT	IBM 5182 Color Printer
PRN5202.PDT	IBM 5201 Quietwriter Printer, Model 1
	IBM 5201 Quietwriter Printer, Model 2
	IBM 5202 Quietwriter III
	IBM 5204 Quietwriter Printer
PRN5216.PDT	IBM 5216 Wheelprinter
PRN5223.PDT	IBM 5223 Wheelprinter E

The following PDTs are supported for 5250 sessions only:

File Name	Printer Name/Model
CPQPM20.PDT	Compaq PageMarq 15 - HP Mode
	Compaq PageMarq 20 - HP Mode
EAP2250.PDT	Epson AP2250
EAP3250.PDT	Epson AP3250
EAP5500.PDT	Epson AP5000
	Epson AP5500

EFX1170.PDT	Epson FX1170
EFX5000.PDT	Epson DFX5000
	Epson DFX8000
EFX850.PDT	Epson FX850
ELQ1070.PDT	Epson LQ570
	Epson LQ1070
ELQ2550.PDT	Epson LQ2550
ELQ510.PDT	Epson LQ510
ELQ860.PDT	Epson LQ860
ELX810.PDT	Epson LX810
EPLPCL4.PDT	Epson EPL7000 - HP Mode
EPLPCL5.PDT	Epson EPL8000 - HP Mode
ESQ1170.PDT	Epson SQ1170

If a PDT file does not exist for the printer being used, you can create your own. To do so, first create a printer definition file (PDF) and convert it into a PDT file, as described in “Using PDT Files” on page 22. PDF files are saved in the **PDFPDT** subdirectory under the directory in which Personal Communications has been installed.

PFT Migration

You can migrate a PC Support/400 Workstation Feature Printer Function Table (PFT) to a PDF for PC400. Refer to “PFT Migration Utility” on page 220 for more information.

Setting Printer Control Parameters

You can set Printer Control parameters, such as the maximum number of lines per page, the maximum number of columns, and fonts. These parameters are initially set to the defaults. Use this function to change specific control items.

Note: When a PDT file is used, this function cannot be used.

You can set the following parameters.

Table 1 (Page 1 of 2). Print Control Parameters (Text)

Parameter	Description
CPI	Specifies the number of characters to be printed per inch. If CPI was not set previously, a CPI value suitable for the font selected from the Font list box is assumed as the default.
LPI	Specifies the number of lines to be printed per inch. If LPI was not set previously, an LPI value suitable for the font selected from the Font list box is assumed as the default.
Maximum Number of Lines per Page	Specifies the maximum number of lines per page. A number 1–255 can be specified. The default is **66**.
Maximum Number of Characters per Line	Specifies the maximum number of characters per line. A number 1–255 can be specified. The default is **132**.

Table 1 (Page 2 of 2). Print Control Parameters (Text)

Parameter	Description
Font	Lists, in the list box, the fonts that can be used with the currently selected printer. The fonts in brackets [ ] are device fonts specific to the printer driver. The other fonts are graphics display interface (GDI) fonts printed in bit map formats.
Print Options	The options listed in the following table can be selected as print options. These options are not available for the printer session.

From either a PC/3270 or PC400 display session, you can set additional parameters by selecting the **Options** button, as follows:

Table 2 (Page 1 of 2). Print-Control Options

Option	Item to be set
Suppress null lines	Determines whether to delete lines containing only null or non-printable characters (null or non-printable field characters, and field attributes) or to print them as null lines. **Selected** Null lines are not printed. **Not selected** Null lines are printed. This option can be used when: The **Print Screen** command is used LU type 3 printing, or non-SNA printing is done The combination of bits 2 and 3 of the WCC is not 00.
Print nulls as spaces	Determines whether to print NULL control codes as null characters. **Selected** The codes are printed as blanks. **Not selected** The codes are treated as null characters. This option can be used when: The **Print Screen** command is used LU type 1 or 3 printing, or non-SNA printing is done.

Table 2 (Page 2 of 2). Print-Control Options

Option	Item to be set
Suppress auto new line when:	**CR at maximum print position +1** Determines whether to perform automatic new line when CR is the maximum number of columns to be printed away from the first column. **Selected** Automatic new line is not done. The characters after the CR code are printed on the same line. **Not selected** Automatic new line is done. **NL at maximum print position +1** Determines whether to perform automatic new line/carriage return before new line/carriage return (NL) is done when NL is the maximum number of columns to be printed away from the first column. **Selected** Automatic new line is not done. **Not selected** After automatic new line is done, new line is done again. This option can be used when LU type 3 printing or non-SNA printing is done and the combination of bits 2 and 3 of the WCC is 00. This option cannot be used in 5250 sessions.
Ignore FF when at first print position	Determines whether to ignore the FF code at the beginning of the buffer address. **Selected** The FF code is ignored and not executed. **Not selected** The FF code is executed. This option can be used when: The **Print Screen** command is used LU type 1, LU type 2, LU type 3, or non-SNA printing is done. This option cannot be used in 5250 sessions.
FF takes a print position if followed by data	Determines whether to print null characters if data follows the FF code. **Selected** FF is executed, and a blank character is printed at the beginning of the next page. Therefore, the next data is printed in the second column of the line. **Not selected** FF is executed, and the next data is printed at the beginning of the first line on the next page. This option can be used when: The **Print Screen** command is used Host initiated local copy and LU type 3 printing, or non-SNA printing is done. In both PDT and standard modes. This option cannot be used in 5250 sessions.

When you use a PC400 printer session, you can set additional parameters by clicking the **Options** button, as follows.

Table 3. Print Control (PC400 Only)

Parameter	Description
Page Orientation	Allows you to change the default page orientation to specify how to print a document on the workstation printer. If the orientation is explicitly set by the AS/400 printer control code, the explicit orientation is used. The options are listed in the following table.

Table 4. Page Control (PC400 Only)

Option	Item to be set
Drawer 1 orientation	The default page orientation for the paper from drawer 1. **Computer output reduction** The document is printed in landscape. The font, pitch, and margins are set to appropriate values to fit on a page. **Portrait** The document is printed in portrait. **Landscape** The document is printed in landscape.
Drawer 2 orientation	The default page orientation for the paper from drawer 2. **Computer output reduction** The document is printed in landscape. The font, pitch, and margins are set to appropriate values to fit on a page. **Portrait** The document is printed in portrait. **Landscape** The document is printed in landscape.
Automatic Page Orientation	Determines whether to calculate the page orientation when the page orientation is currently **Default**. **Selected** The page orientation is calculated as follows: 1. If the output exceeds the current page size, **Drawer 1 orientation** or **Drawer 2 orientation** is used. 2. If the output fits the current page size, the dimensions are compared. If the shorter dimension is specified as depth; then **Landscape** is used, otherwise **Portrait** is used. **Not selected** **Drawer 1 orientation** or **Drawer 2 orientation** option is used.

Table 5. Form Settings (PC400 Only)

Parameter	Description
Form Settings	Specifies the form that should be selected when an application program specifies one of the following paper sources: Drawer-one form Drawer-two form Envelope-hopper form Before using this function, you must configure the paper trays and forms in the printer-driver setup.

Table 6. Print Control Parameters - Graphics (PC/3270 Only)

Parameter	Description
Scaling	The screen image is printed with the resolution that is calculated as the actual screen resolution multiplied by the following parameters. **x1** Same resolution as screen **x2** Double the resolution in each dimension **x3** Triple the resolution in each dimension **x4** Four times the resolution in each dimension
Black-on-White	This option allows you to determine how the black pixels on the screen are printed. **Yes** Black pixels are printed as white pixels. Pixels other than black are printed as black pixels when you use a monochrome printer. When you use a color printer, they are printed in the same color as on the screen. **No** Black pixels are printed in black. Pixels other than black are printed as white pixels when you use a monochrome printer. When you use a color printer, they are printed in the same color as on the screen.

Setting Printer Control Items

To set or change control items:

1. Choose **File - Printer Control** from the menu bar of the session window.
2. Choose **Text** or **Graphics**.

   The Printer Control window appears.
3. Change the items to be set by referring to 1, 2, or 6.

   To switch from the current settings back to the defaults, select **Default**.
4. If PC400, the **Advanced** button is displayed at the bottom right of the window. Click **Advanced**; the Printer Control window appears.
5. Set each option by referring to 3 and 4.
6. When all the items have been set, click **OK**.

Printing to Disk

If you are using a PDT, you can save a host print-job or the contents of the session window (Print Screen) to a workstation file instead of printing it.

Two types of Print-to-Disk function are provided by Personal Communications:

Print-to-Disk Append:

Appends multiple host print jobs or print screen jobs to a single workstation file.

Print-to-Disk Separate:

Saves each host-print job or screen to a separate workstation file. You can specify the file name, but the extension is automatically assigned as a decimal number from 000 to 999. If you delete a file, its number will be re-used. When all 999 numbers have been used, subsequent print jobs are appended to file 999.

Notes:

1. Print-to-Disk is not available for the Print-Graphics function.
2. Print-to-Disk can be used only when you use a printer definition table (PDT) file.

To set up Print-to-Disk:

1. Click **File - Printer Setup** from the menu bar in the session window.

   The Printer Setup window lists the supported printers.
2. Select **Print to Disk Append** or **Print to Disk Separate** from the list box.
3. Click **Select PDT**.

   The Select PDT file window appears.
4. Select a PDT file from the list; then click **OK**.

   The Printer Setup window re-appears.
5. Click **Setup**.

   The File Selecting window appears.
6. Specify a file name, drive, and path; then click **OK**.

   Note: If you specify the name of an existing file, subsequent print jobs are appended to the data in the original file in the case of Print to Disk Append.

Chapter 5. Transferring Files

Personal Communications File Transfer enables one or more files to be transferred between a host system and workstation at the same time. Transfer types and translation tables can be defined in advance.

Host Requirements

For PC/3270 File Transfer in SBCS mode, you need one or more of the following host file-transfer programs (referred to as IND$FILE):

IBM 3270-PC File Transfer Program, 5665-311 (MVS/TSO)
IBM 3270-PC File Transfer Program, 5664-281 (VM/SP 2.1)
IBM CICS/VS 3270-PC File Transfer Program, 5798-DQH (CICS/VS 1.5)

For PC/3270 File Transfer in DBCS mode, you need one or more of the following host file-transfer programs (referred to as APVUFILE):

VM/CMS File Transfer Program, 5799-BWK (Japan)
VM/CMS File Transfer Program, 5799-PGX (Korea, China, Taiwan)
MVS/TSO File Transfer Program, 5799-BWJ (Japan)
MVS/TSO File Transfer Program, 5799-PGY (Korea, China, Taiwan)
CICS (MVS, VSE) File Transfer Program, 5799-BWL (Japan)
CICS (MVS, VSE) File Transfer Program, 5799-PGZ (Korea, China, Taiwan)

For PC400 File Transfer in DBCS mode, you need one of the following host file-transfer programs (referred to as APVAFILE):

Personal Communications Tools/400 V1R1, 5799-QBX (Japan)
Personal Communications Tools for OS/400 V1R1, 5799-FPZ (Korea, China, Taiwan)

You can perform the following file transfer functions:

Send files to the host system
Receive files from the host system
Use lists of files
Create templates to define file names and transfer types
Define transfer types
Set transfer options
Modify translation tables
Import or export files (PC/3270 CICS only)
Create interactive document profile (IDP) files (PC/3270 CICS only)
Transfer files via the Kermit, XMODEM or YMODEM protocols

Sending Files to the Host System

To send a file from your workstation to the host system:

1. Sign on to the host system.
2. Select **Transfer** from the menu bar of the session window. (You can also select the **Send** button on the tool bar.)
3. Select **Send File to Host**.

© Copyright IBM Corp. 1989, 1997

The Send File to Host window appears.

4. Specify the name of the workstation file to be sent to the host system by selecting the name from the list box or entering the name in the **PC File** text box.
5. Enter the name under which the file will be stored on the host; then select the transfer type. If a template is provided for the file type you are transferring, the host file name and the transfer type appear automatically.

   Using List Files

   Select **Open List-File**; then select the list to be used for transfer. For the details of how to create list files, see page 33.

   Easy Mouse Operation

   Move the cursor to the name of the file to be transferred in the **PC File** list box. Double-click the left mouse button and the host file name and transfer type are automatically assigned by means of a template. Your workstation automatically starts transferring the selected file to the host system.

6. Click **Send**.

   The file is sent to the host system. The send status appears in the Send a File Status dialog box.

Receiving Files from the Host System

To transfer a file from the host system to your workstation:

1. Sign on to the host system.
2. Select **Transfer** from the session window menu bar. (You can also select the **Receive** button from the tool bar.)
3. Select **Receive File from Host**.

   The Receive File from Host dialog box appears.

4. Specify the name of the host file to be transferred. Enter the name in the **Host File** text box, or specify it as follows:

   Using the Paste button

   If you have copied one or more host file names to the clipboard, you can paste the names into the transfer list.

   Using the Load button

   If a Windows application program that uses dynamic data exchange (DDE) is designed to provide file lists to the workstation, the program can be used for loading a list.

5. Enter the name under which the file will be stored on the workstation, and select the transfer type.

   Using List Files

   Select **Open List-File**, and select the list to be used for transfer. (For an explanation of how to create list files, see page 33.)

If a template is provided for the file type you are transferring, the workstation file name and the generated transfer type appear automatically.

6. Click **Receive**.

   The receive status appears in the **Receive a File Status** box.

Using List Files

If the same files are transmitted frequently, you can create a list of the files and save it.

A list file can be used for both Send and Receive. The default list file extension is .SRL.

Creating List Files

To create a list file:

1. Select **Transfer** from the menu bar of the session window or the tool bar.
2. Select **Send File to Host** or **Receive File from Host**.

   The corresponding dialog box appears.
3. Select a file to be transferred from the **Host File Name** or **PC File Name** list box by pointing to the name of a file to be selected. While holding down the Ctrl key, click the left mouse button.

   The file name, its corresponding workstation or host file name (according to the available templates), and the transfer type appear in the lower part of the window.
4. After all desired files have been selected, click **Save List**.

   The Save File-Transfer List File As dialog box appears.
5. Enter a list name, and click **OK**.

Editing Lists

To edit the contents of a previously created list:

1. As explained above, display the Send File to Host or Receive File from Host dialog box.
2. Select **Open List-File**.

   The Open File-Transfer List File dialog box appears.
3. Select the name corresponding to the list file to be edited, then click **OK**.
4. The contents of the selected list appear in the Send File to Host or Receive File from Host dialog box.
5. Edit the contents of the list file.

   Changing the contents of a list

   Choose the file to be changed from the list, and overwrite the items to be changed in the text box.

   Deleting a file from the list

Choose the file to be deleted, and click **Delete from List**.

Adding a file to the list

Double-click the file to be added from the list of host or workstation files.

6. Select **Save List**.

   The Save File-Transfer List File As dialog box appears.

7. Enter a name and then click **OK**.

Managing Templates

A *template* is a set of rules to be used by the workstation to automatically generate a workstation or host file name and transfer type when you specify a file to be sent or received.

You can have up to 32 templates. They are automatically numbered from 1 to 32.

When you specify a file to be transferred, the workstation scans the templates, starting from template 1. It uses the first matching template to generate a name for the transferred file and the transfer type.

To manage a template:

1. Select **Transfer** from the menu bar of the session window.
2. Select **Send File to Host** or **Receive File from Host**.

   The Send File to Host or Receive File from Host window appears.

3. Select **Template**.

   The Template dialog box appears. The contents of the dialog box depend on the connected host system.

Adding Templates

The list box for the Template dialog box lists the currently stored templates.

To add a template:

1. Select any template from the list box.

   The contents of the selected template appear under the list box.

2. Change the workstation or host file names or extensions by overwriting them; then select the transfer type. (For details of the transfer types, see “Defining Transfer Types” on page 35.)
3. Click **Add**.

   The dialog box for determining where in the list to display the new template appears.

4. Select a template number and specify whether to display the new template before or after the template that has that number. Click **OK**.

   The new template is added to the list in the appropriate position.

Replacing and Deleting Templates

To change the contents of a currently stored template, or to delete a template:

1. Select the template to be changed or deleted.

   The contents of the selected template appear under the list box.

2. To change the contents, overwrite the appropriate part and then click **Replace**.

   To delete a template, click **Delete**.

   The selected template is changed or deleted, and the contents of the template list box are changed.

Testing Templates

To test the contents of an added or changed template:

1. Select the template to be tested from the list box.

   The number of the selected template appears in the Test Templates box in the lower part of the dialog box.

2. Select or enter data for the following items:

   Test mode Determine which mode is to be used for the test; the mode in which a file is transmitted from the workstation to the host system (send), or the mode in which a file is transmitted from the host system to the workstation (receive).

   Templates Determine which templates to test: only the template selected in step 1, or all registered templates.

   Source file Enter the name of the file to be used for the test.

3. Click **Test**.

   Target File indicates the name that has been generated by the template.

Note: Testing templates does not transfer files.

Defining Transfer Types

Transfer types define the option information used for controlling file transfer. Up to 32 transfer types can be defined for each host system. Text, binary, and append (excluding CICS) are the defaults.

To add or change transfer types:

1. Click **Transfer - Setup** from the menu bar of the session window.
2. Click **Define Transfer Types** from the submenu.

   The Transfer-Type Definition window appears. The items that appear depend on the selected host system.

3. Enter transfer-type names in the **Transfer-Type Names** text box, or select them from the list.
4. Select or enter the required items (see the explanation below).

   To add a transfer type, click **Add**. To replace one, click **Replace**. To delete a transfer type, click **Delete**.

5. Click **OK**.

Explanation of Items to Be Defined

Choosing the **Transfer-Type Definition** command enables you to set the following items:

File Options

The file options that can be used depend on the type of the connected host system and the host code page selected when the session was configured. Table 8 lists the file options and the host systems and modes in which the options can be used. The mode values are:

Table 7. Mode Values for File Transfer Options

Mode	Host Code Page
DBCS	930 (Japan Katakana) 930 (Japan Katakana - Extended) 939 (Japan Latin - Extended) 933 (Hangeul) 935 (Simplified Chinese) 937 (Traditional Chinese)
SBCS	Others

The following chart lists options for PC/3270. Refer to Chapter 16, “File Transfer for PC400” on page 327 for information on PC400 options.

Table 8 (Page 1 of 2). Transfer File Options (3270 Only)

File Option	Host System	Mode	Conversion Details
ASCII	VM/CMS MVS/TSO ICS	SBCS DBCS	Converts codes as follows when a file is sent: Converts 1-byte workstation codes to EBCDIC codes Converts 2-byte workstation codes to IBM host DBCS codes Adds SO (hex 0E) and SI (hex 0F) before and after the DBCS field Converts RS (hex 1E) and US (hex 1F) to SO (hex 0E) and SI (hex 0F) Converts codes as follows when a file is received: Converts EBCDIC codes to 1-byte workstation codes Converts IBM host DBCS codes to 2-byte workstation codes Removes SO (hex 0E) and SI (hex 0F) from before and after a DBCS field
JISCII	VM/CMS MVS/TSO CICS	DBCS	Converts codes as follows when a file is sent: Converts 1-byte workstation codes to EBCDIC codes Converts 2-byte workstation codes to IBM kanji codes Adds SO (hex 0E) and SI (hex 0F) before and after the kanji field Converts RS (hex 1E) and US (hex 1F) to SO (hex 0E) and SI (hex 0F) Converts codes as follows when a file is received: Converts EBCDIC codes to 1-byte workstation codes Converts IBM kanji codes to 2-byte workstation codes Removes SO (hex 0E) and SI (hex 0F) from before and after a kanji field

Table 8 (Page 2 of 2). Transfer File Options (3270 Only)

File Option	Host System	Mode	Conversion Details
CRLF	VM/CMS MVS/TSO CICS	SBCS DBCS	Converts codes as follows when a file is sent: Does not remove CRLF (hex 0D0A) from the end of each line. The code is treated as a delimiter for each record. Removes EOF (hex 1A) from the end of the file. Converts codes as follows when a file is received: Adds CRLF (hex 0D0A) to the end of each line. Adds EOF (hex 1A) to the end of the file. Removes EOF from the existing file, and appends EOF to the end of the added file when APPEND is specified.
APPEND	VM/CMS MVS/TSO	SBCS DBCS	Appends the sent file to the existing host file. Appends the received file to the existing workstation file.
SO	VM/CMS MVS/TSO CICS	DBCS	This option is valid only for DBCS when used with the *JISCII* and *ASCII* options when receiving a file. SO (hex 0E) and SI (hex 0F) are converted to RS (hex 1E) and US (hex 1F).
NOSO	VM/CMS MVS/TSO CICS	DBCS	This option is valid only for DBCS when used with the *JISCII* and *ASCII* options when sending a file. SO (hex 0E) and SI (hex 0F) are not added before and after the DBCS field. RS (hex 1E) and US (hex 1F) are not converted to SO (hex 1F) and SI (hex 0F).
BLANK	VM/CMS MVS/TSO CICS	DBCS	This option is valid with the *CRLF* option when receiving a file. BLANK (hex 40) is not removed from the end of each line.
USER	VM/CMS MVS/TSO CICS	DBCS	This option is valid only for DBCS when used with the *JISCII*, *ASCII*, and *SO* options when receiving a file. SO (hex 0E) and SI (hex 0F) are not converted to RS (hex 1E) and US (hex 1F); they are written to a file without being converted.

Record Format

Valid only for VM/CMS and MVS/TSO when APPEND is not specified for file transmission. Any of the these can be selected:

Default value
Fixed (fixed length)
Variable (variable)
Undefined mode (for MVS/TSO only)

If the default value is selected, the record format is selected automatically by the host system.

Specifying **Variable** for VM file transfer enables host disk space to be used efficiently.

Logical Record Length (LRECL)

Valid only for VM/CMS and MVS/TSO when APPEND is not specified for file transmission.

Enter the **logical record length** to be used (host record byte count) in the **LRECL** text box. If **Variable** and **Undefined Mode** are specified as the record format, the logical record length is the maximum record length within a file. The maximum value is 32767.

The record length of a file sent from a workstation to the host system might exceed the logical record length specified here. If so, the host file transfer program divides the file by the logical record length.

When sending a text file from a workstation to a host, if the text file contains 2-byte workstation codes (such as kanji codes), the record length of the file is changed because SO and SI have been inserted.

To send a file containing long records to the host system, specify a sufficiently long logical record length.

Because the record length of a workstation file exceeds the logical record length, a message does not appear normally if each record is divided. To display a message, add the following specification to the [Transfer] item of the workstation profile:

```
DisplayTruncateMessage = Y
```

TSO Allocation Parameter (MVS/TSO)

Valid only for MVS/TSO when **APPEND** is not specified for file transmission. The following items can be specified:

[Allocation Amounts]

Primary	Enter the number of tracks or cylinders allocated to this file transfer.
Secondary	If the primary allocation is not sufficient for the entire file transfer, enter additional storage capacity allocated to the file transfer.

[Allocation Units]

TRACKS	Specify this parameter to allocate a host file by track. Ask your system manager whether to use tracks or cylinders as the unit.
CYLINDERS	Specify this parameter to allocate a host file in units of cylinders.
AVBLOCK	Specify this parameter to allocate a host file in units of blocks.

[Block size]

This item is used only to create a new data set. Enter the block size of a new host data set, in bytes, in the text box. If this item is omitted, the workstation assumes the value that appears in the **Logical Record Length** box. The maximum value is 32767. If **AVBLOCK** is selected, the block size is the block size of the new data set.

Additional Options

The required host command options can be entered in the **Additional Options** text box.

Setting Miscellaneous Transfer Options

To set miscellaneous options:

1. Click **Transfer - Setup** from the menu bar of the session window.
2. Click **Miscellaneous Settings** from the submenu.
3. Change the required settings.
4. Click **OK**.

The following information can be defined for file transfer options:

File-Transfer Timeout

The time the workstation waits for a response from the host system can be entered (in seconds). If the host system does not respond, the transfer is canceled, and an error message appears. A number from 20 through 65535 (or 0) can be specified. The default is 30 seconds. Specify an appropriate value such that the error message does not appear too early. If you specify 0, a timeout is not set.

If a packet or block size is relatively large for low-speed lines, such as SDLC or COM port lines, it is recommended that 150 seconds or greater be specified.

Clearing Sessions before Transfer (3270 Only)

You can specify whether a Clear command is sent to the host system before a file is transferred. Choose any of these option buttons:

Default value A Clear command is sent before a file is transferred (VM/CMS or CICS only).

Yes A Clear command is sent for MVS also.

No A Clear command is not sent for any host system.

File Transfer Packet Size (3270 Only)

The amount of memory (in bytes) used by the workstation for transmission and reception. If a large value is entered, a file is transferred more quickly, but the memory overhead is larger. The default value is 2500. In the case of Telnet3270, you can specify a packet size larger than 8,000 bytes by adding the following line to the telnet3270 stanza in your workstation profile:

```
SendBufferSize=nnnn
```

Extension for List Files

You can change the default extension (.SRL) of file-transfer list files.

Status Window

You can choose the method of displaying the file-transfer-progress status. The default value is **Show in Session**.

Show in Session
When file transfer starts, the status dialog box appears. The name of the file being transferred and the transfer progress appear.

Show in icon When file transfer starts, the status icon appears on the screen. If the icon is restored, the status dialog box appears.

PC Code Page

When a file is transferred, EBCDIC codes are converted to 1-byte workstation codes, and vice versa. A valid value is automatically selected from among the following values for SBCS sessions: 437, 813, 819, 850, 852, 855, 857, 860, 861, 863, 865, 866, 869, and 915, and from between the following values for DBCS sessions: 897 or 1041 (Japanese), 1088 (Hangeul), 1114 (Traditional Chinese), and 1115 (Simplified Chinese), according to the host code page specified when the workstation is configured. For an explanation of how to select host code pages, see the online help for the host code page.

Enhanced Protocol (SBCS Global Network Connection Only)

This option enables faster file transfer in most cases. The packet size for Enhanced Protocol is fixed, so the File Transfer Packet Size setting is ignored.

Default Host Command

The host command to be called when file transfer starts can be entered. If nothing is entered in this text box, IND$FILE or its equivalent for other countries is used for 3270 SBCS sessions, APVUFILE is used for 3270 DBCS sessions, and APVAFILE is used for 5250 sessions.

Default Directory for File Transfer

You can specify the default directory that appears in the Send File to Host or Receive File From Host dialog box.

Setting Up the Translation Table

You can create or edit the translation table to be used for sending or receiving files.

When you use a DBCS session as the host session, that is, when 930 or 939 (Japanese), 933 (Hangeul), 935 (Simplified Chinese), or 937 (Traditional Chinese) is specified during configuration as the host code page, you can create and change a translation table for the user-font area. A DBCS translation table is then used for displaying a screen, printing, and sending and receiving files.

Changing the Translation Table

To change the translation table:

1. Click **Transfer - Setup** from the menu bar of the session window.
2. Click **Translation Table** from the submenu.

   The Translation-Table Setup window appears.
3. The table currently being used (IBM default or the name of a user-defined table) is shown. Choose either **IBM Default** or **User-Defined**.
4. If you choose **User-Defined**, enter a translation-table name in the text box, or select a name by clicking **Browse**.
5. Click **OK**.

Customizing the Translation Table

You can create a user-specific translation table for transmission or reception, or you can edit an existing translation table.

To create or edit a translation table:

1. In the Translation-Table Setup dialog box, click **Customize** in the Upload or Download window.

   The Customize Translation window appears.

   If you did not choose **IBM Default** or if you chose **New** from the File pull-down menu, the default values appear in the table.

   Translation source codes
   PC code-points when an upload translation table is edited. Host code-points when a download translation table is edited.

   Translation target codes
   Host code-points when an upload translation table is edited. PC code-points when a download translation table is edited.

2. Double-click the code to be changed in the table, and change the value in the entry field that subsequently appears.
3. Click **Save** or **Save As** from the File pull-down menu.
4. If asked, enter a name in the Save Translation File As window and click **OK**.
5. Click **Exit** from the File pull-down menu of the Customize Translation window.

User-Font Area (DBCS Only)

For DBCS sessions, the following code ranges can be defined by the user with the DBCS translation table:

User-font area Range

Host kanji code
First byte: from X'69' to X'7F' Second byte: from X'41' to X'FE'

Workstation kanji code
First byte: from X'F0' to X'F9' Second byte: from X'40' to X'7E', from X'80' to X'FC'

Host kanji numbers
The host kanji-numbers area corresponds to the user-font area of host kanji codes. For example, the host kanji number 10561 corresponds to the host kanji code 6941.

JIS KUTEN numbers
From section 95 to section 114 (from 1 to 94)

Traditional Chinese host code
From X'C241' to X'E2FD' (low byte X'41' to X'FD', skipping X'7F')

Traditional Chinese workstation code
The following ranges:

From X'FA40' to X'FEFE' (low byte X'40' to X'7E', X'A1' to X'FE')

From X'8E40' to X'A0FE' (low byte X'40' to X'7E', X'A1' to X'FE')
From X'8140' to X'8DFE' (low byte X'40' to X'7E', X'A1' to X'FE')
From X'8181' to X'8C82' (low byte X'81' to X'A0')
From X'F9D6' to X'F9FE'

Simplified Chinese host code
From X'7641' to X'7FFD' (low byte X'41' to X'FD', skipping X'7F')

Simplified Chinese workstation code
From X'8DA1' to X'A0FE' (low byte X'A1' to X'FE')

Hangeul host code
From X'D441' to X'DDFD' (low byte X'41' to X'FD', skipping X'7F')

Hangeul workstation code
The following ranges:

From X'C9A1' to X'C9FE' (low byte X'A1' to X'FE')
From X'FEA1' to X'FEFE' (low byte X'A1' to X'FE')
From X'8FA1' to X'A0FE' (low byte X'A1' to X'FE')

Import/Export (3270 CICS Only)

Import/Export is an office system communication program and an application program executed under the IBM Customer Information Control System (CICS).

Clicking **Import/Export** loads a module into workstation memory. You can then start Import or Export from a menu on the host screen.

When you export a document from the host, the workstation receives two files: one is the file itself, and the other is the interchange document profile (IDP) file, which contains document header information.

When you **Import** a file to a host system, it must be accompanied by an IDP file of the same name. If the necessary IDP file does not exist, you can create it as described in “Creating IDP Files” on page 43.

Transferring Files Using Import/Export

To transmit files using Import/Export:

1. Verify that the window of the host session is active and ready for file transfer.
2. Click **Transfer - Import/Export** from the menu bar of the session window.

   The minimized Import/Export Status dialog box appears.
3. Select **Import** or **Export** from the host application menu.
4. Specify the host and workstation file names of the file to be transferred. Run Import or Export.

   When Import or Export starts, the Import/Export Status dialog box is maximized.

   After the file is transferred, the dialog box is closed.

Creating IDP Files

To send a document to the host system using Import, you must have an IDP file that includes information on the document. If you have previously exported the file, you should have an IDP. If not, or if you have deleted the IDP file, you must create an IDP file.

To create an IDP file:

1. Click **Transfer - Setup** from the menu bar of the session window.
2. Click **Create IDP File** from the submenu.
3. Enter the name for the IDP file to be created, or select it from the list.

   The IDP file has the same name as the file to be transferred, and the extension (.IDP).
4. Select **OK**.

Transferring Files

Chapter 6. SNA Node Operations

SNA Node Operations enable you to display information and manage the node for certain Personal Communications resources, which can be useful when operating the SNA node. The following tasks are supported:

Starting and stopping resources
Deleting resources
Displaying resource information
Changing session limits
Initiating path switches

The configuration information for a SNA Node is stored in an ASCII file, with the extension .ACG. You can edit the file with an ASCII editor to change the configuration. To ensure that your new configuration is correct you can use the Verification tool. For complete information on ASCII configuration and verification, see the chapters “Introduction to ASCII Configuration” and “ASCII Configuration Keywords” in *Personal Communications System Management Programming*.

You can display information or take action on resources if you start 3270, 5250, or any client/server sessions with one of the following attachment types:

System/390 Connections

LAN LAN via IEEE 802.2
3270 via AS/400 (passthru)
APPC3270 via LAN
COM port
SNA-over-Async
Advantis (IIN)
SDLC Synchronous Data Link Control (MPA)
3270 via AS/400 (passthru)
APPC3270 via SDLC
5250 3270 via AS/400 (passthru twinax)
AnyNet SNA over TCP/IP
LU 0, 1, 2, 3
APPC3270
LU 0, 1, 2, 3 via DLUR

AS/400 Connections

LAN LAN via IEEE 802.2
SDLC Synchronous Data Link Control (MPA)
5250 Twinaxial Data Link Control (APPC)
COM port
SNA-over-Async
AnyNet SNA over TCP/IP
APPC5250

Client/Server Connections

LAN LAN via IEEE 802.2
Twinaxial
Twinaxial Data Link Control (APPC)

© Copyright IBM Corp. 1989, 1997

SNA Node Operations

COM port
SNA-over-Async
SDLC Synchronous Data Link Control
AnyNet SNA over TCP/IP
APPC

SNA resources that can be displayed or managed include the following:

Connection Networks
Allow APPN nodes in a LAN to have direct links with each other without requiring logical link definitions at each node.

Connections
Link stations to the adjacent nodes

CPI-C Side Information
Associate a set of parameters with a specified symbolic destination name.

Data Link Control
How data is formatted for transmission on the physical connection.

Devices
Parts of the workstation hardware, such as adapters, that are used to transmit and receive data.

DLUR PU
A dependent logical unit requester (DLUR) physical unit (PU) is a PU in an APPN end node that owns dependent LUs, but requests that a dependent LU server provide the SSCP services for those dependent LUs.

Focal Point
A system that provides centralized network management services.

Local LU 0 to 3
A local logical unit (LU) type 0, 1, 2, or 3 is a dependent LU on the workstation that provides services for 3270 terminal and printer emulation applications.

Local LU 6.2
A local logical unit (LU) type 6.2 is an independent or dependent LU that provides APPC services.

LU 6.2 Session
Transports data between two partner LU 6.2s. Conversations between transaction programs use LU 6.2 sessions.

Mode
The name used by the initiator of a session to designate the characteristics desired for the session, such as traffic pacing values, message-length limits, sync point and cryptography options, and the class of service (COS) within the transport network.

Node
The control point that manages the node and its associated resources. The local node provides APPN services.

Partner LU 6.2
A remote computer that communicates through an APPC session with local LU 6.2s.

RTP Connection
In high-performance routing (HPR), a rapid transport protocol (RTP) connection is the connection established between the endpoints of the route to transport session traffic.

Transaction Program
A transaction program (TP) is a program that processes transactions in an SNA network. There are two kinds of TPs: application transaction programs and service transaction programs.

Considerations

Virtual Memory

If you receive a message stating that the system is running low on virtual memory, you should increase the virtual memory paging file. If you get this message as you are trying to open new host sessions or starting some Personal Communications function such as File transfer, then it is highly recommended that you perform this option. You can increase the size of the virtual memory paging file on Windows NT as follows:

For Windows NT V4.0

1. Select Start-Settings-Control Panel.
2. On the Control Panel double click on the System icon.
3. Select the Performance tab on the System Properties panel and then press the Change button.
4. Select the appropriate drive and increase the maximum size value.
5. Press the Set button to establish the new size.
6. Press the OK button on the Virtual Memory panel.
7. Press the Close button on the System Properties panel.
8. You will be prompted to restart your computer. You should close any open applications and restart your computer.

For Windows NT V3.51

1. From the Program Manager double click on the Main program group icon.
2. From the Main program group double click on the Control Panel program group icon.
3. From the Control Panel program group double click on the System icon.
4. On the System panel click on the Virtual Memory button.
5. On the Virtual Memory panel, make the appropriate changes to increase the maximum size value and press the Set button to establish the new size.
6. Press the OK button on the Virtual Memory panel.
7. Press the Close button on the System Properties panel.

8. You will be prompted to restart your computer. You should close any open applications and restart your computer.

Emulator session icons

Emulator session icons will not function correctly after installing a new version of Personal Communications to a different directory if the session icons were created in a folder other than the Personal Communications folder. For example, if Personal Communications was installed in C:\Personal Communications and if you had created session icons on the desktop, then after you install a newer version of Personal Communications to a different directory (for example, C:\pcomm), the session icons on the desktop will not function correctly.

The icons can be made to work by simply changing the Target and Start In fields on the Properties sheet for each of the icons. (In the example above, all references to C:\Personal Communications would be changed to C:\pcomm.)

Migrating from Windows 95 to Windows NT

On Windows NT, Personal Communications installs itself as an entry in the Common area of the NT V4.0 Start/Programs menu (that is, below the split line on the Programs menu). Personal Communications for Windows 95 places itself in the Private area of the Programs menu (i.e. above the split line on the Programs menu). When you install Personal Communications version 4.2 on a machine where Personal Communications version 4.1 for Windows 95 was previously installed, the Personal Communications for Windows 95 icons will not automatically be removed from the Private area of the Programs menu. You can manually remove these icons by going into **Taskbar Properties**/**Start Menu Programs**/**Remove**.

Starting Node Operations

To start Node Operations, click on the **SNA Node Operations** icon in the Personal Communications folder.

Using the Menu Bar

From the menu bar, select one of the following:

Operations

To start or stop a SNA node.

To start a node, select the configuration file you want to use.

To change session limits (CNOS).

To apply a new configuration file, select the configuration file you want to use.

Launch

To launch to other Personal Communications programs, such as Log Viewer, Trace Facility, or SNA Node Configuration.

View

To modify the layout of your Personal Communications window (Tool bar or Status bar).

To select resource attributes, which allows you to customize the display of SNA resource attributes.

To view frequently used resources, such as:

Node
Connections
Local LU 0 to 3
Partner LUs
LU 6.2 sessions

Displaying a Resource

To display a resource, select a resource from the **Select SNA Resource** pull-down list.

Starting a Resource

To start a resource:

1. Select a resource from the **Select SNA Resource** pull-down list.
2. Select the first column of the item to display the pop-up.
3. Select **Start** to start the resource. A started (active) resource can be stopped, but not deleted.

If the resource to be started is a connection, an indicator in the form of a lightning bolt is displayed for the duration of the connection attempt.

Stopping a Resource

To stop a resource:

1. Select a resource from the **Select SNA Resource** pull-down list.
2. Select the first column of the item to display the pop-up.
3. Select **Stop** to suspend the resource. If a resource is stopped (inactive), it can be deleted or redefined.

Deleting a Resource

To delete a resource:

1. Select a resource from the **Select SNA Resource** pull-down list.
2. Select the first column of the item to display the pop-up.
3. Select **Delete** to delete the resource.

A resource to be redefined need not be deleted, but it should be stopped (inactive).

Changing a HPR Path Switch

To perform a high performance routing (HPR) path switch:

1. Select **RTP connections** from the Select SNA Resource pull-down list.
2. Select the first column of the item to display the pop-up.
3. Select **HPR path switch** to change the path for the data on this RTP connection.

Updating SNA Resources Dynamically

It is not necessary to delete an SNA resource before redefining it. A resource must be inactive, however, when you redefine it.

If a redefinition is rejected for a reason other than that the resource is active, a STATE_CHECK return code is returned, as well as a specific secondary return code as listed in the NOF specification. Most rejections are due to inconsistencies in the configuration, such as one of the following:

Attempting to define an LS with the adjacent CP name set to the local CP name.

Attempting to define two link stations on a non-switched port with the same destination address.

Such rejections occur regardless of whether you are defining a resource for the first time or redefining it.

Keep in mind the following when redefining resources:

You may not change the ls_role of a port that has link stations defined on it. The link stations must be deleted before the port role can be changed (because an LS may default to the port ls_role).

You may not change the type of a named DLC. The DLC definition must be deleted before the same name can be reused for a DLC of a different type.

Starting and Stopping the SNA Node Using the Command Line

Another way to start and stop the SNA Node is to use the command line. Three command line programs are available to perform basic operations for the SNA Node.

CSSTART [-p | -q] [cfgfile]

The CSSTART command is used to start the SNA Node with a specified configuration. If the **-p** flag is used, then all messages are shown in a message box popup. Messages are written to stdout by default. The **-q** flag suppresses all output. The **cfgfile** parameter is the full path name of the configuration file you want to use to start the product. If no **cfgfile** parameter is specified, then the default configuration file is used. If no default configuration file has been set, then an error is reported. If the node is successfully started, then CSSTART returns zero, otherwise a non-zero value is returned.

CSSTOP [-p | -q]

The CSSTOP command is used to stop the SNA Node. The flags have the same meaning as for CSSTART. If the node is successfully stopped then CSSTOP returns zero, otherwise a non-zero value is returned.

CSQUERY [-p | -q]

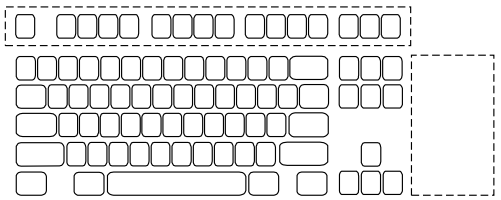
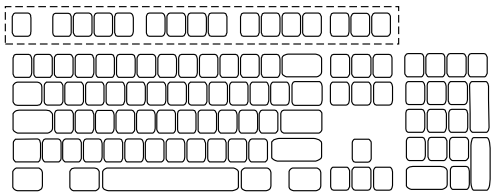
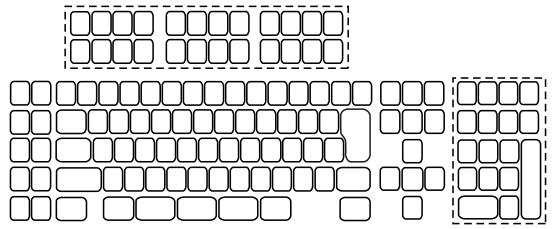
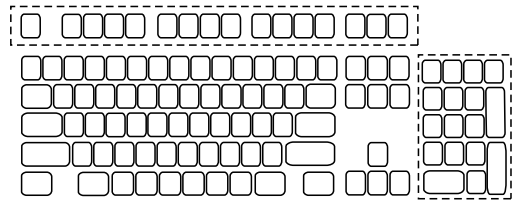
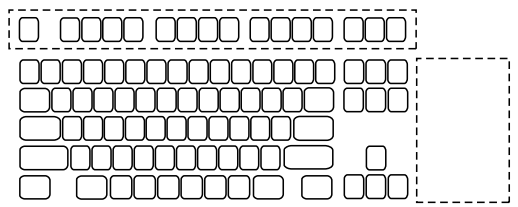
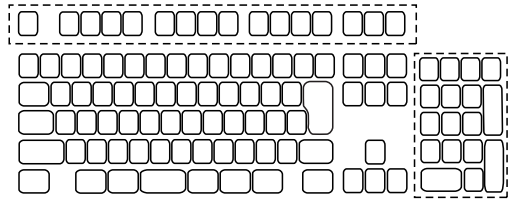
The CSQUERY command is used to query the status of the SNA Node. The flags have the same meaning as for CSSTART. Along with the running or stopped status, the default and active configuration file names are shown. If the node is running, then CSQUERY returns zero; otherwise a non-zero value is returned.

SNA Node Operations

Chapter 7. Country Codes, Code Pages, and Character Sets

This chapter contains information useful in providing national language support for a network station or a gateway.

Table 9. Supported Keyboard Types

Keyboard Type (Characteristics)	Figure
Space Saving (single row of function keys; no numeric keypad)	
Enhanced and MS Natural (single row of function keys; numeric keypad)	
5576-001 (Japanese keyboard with double row of function keys; numeric keypad)	
5576-002 (Japanese keyboard with single row of function keys; numeric keypad)	
5576-003 (Japanese keyboard with single row of function keys; no numeric keypad)	
5576-A01 (Japanese keyboard with single row of function keys; numeric keypad)	

© Copyright IBM Corp. 1989, 1997

Keyboard Country ID and Shift Support

The following table shows the keyboard country ID and shift support for each country.

Table 10 (Page 1 of 2). Keyboard Country ID and Shift Support

Keyboard Country	Enhanced Keyboard ID	Enhanced Keyboard-Lock Mode
Arabic-speaking	238,239,240,253,254	C
Austria	129	S
Baltic		
Estonia	454	C
Latvia	455	C
Lithuania	456	C
Belgium	120	S
Brazil	275	C
Canada (Bilingual)	058	C
Cyrillic		
Bulgaria	442	C
Belarus	463	C
FYR Macedonia	449	C
Russia (441)	441	C
Russia (443)	443	C
Serbia / Montenegro	450	C
Ukraine	465	C
Denmark	159	C
Finland	153	C
France (120)	120	C
France (189)	189	S
Germany	129	S
Greece	319	C
Iceland	197	C
Israel	115	C
Italy (141)	141	C
Italy (142/293)	142	C
Japan	–	C
Laos	466	C
Latin America (Spanish)	171	C
Latin 1 (Open Systems)	1047	697
Latin 2		
Bosnia / Herzegovina (Latin)	234	C
Croatia	234	C
Czech Republic	243	C
Hungary	208	C
Poland	214	C
Romania (Moldavia)	446	C
Slovakia	245	C
Slovenia	234	C
Netherlands	143	C
Norway	155	C
Portugal	163	C
Spain	173	C

Table 10 (Page 2 of 2). Keyboard Country ID and Shift Support

Keyboard Country	Enhanced Keyboard ID	Enhanced Keyboard-Lock Mode
Sweden	153	C
Switzerland (French)	150F	C
Switzerland (German)	150G	C
Turkey (179/402)	179	C
Turkey (440)	440	C
U.K. (166)	166	C
U.K. (168)	168	C
U.S. (English)	101G	C
Vietnam	461	C

Note:

–	Not selectable
S	Shift lock on key 30
C	Caps lock on key 30

SBCS Code Pages and Character Sets

The following table shows SBCS code pages and character sets.

Table 11 (Page 1 of 2). Code Pages and Character Sets

Country	Host CPGID [1]	GCSGID [2]
Arabic-speaking	235	240
Austria	273-1	697-1 or 500-1/697-1
Baltic		
Estonia	1307	1122
Latvia	1305	1112
Lithuania	1305	1112
Belgium	500-1	697-1
Brazil	037-1	697-1
Canada (French)	500-1	697-1
Cyrillic		
Bulgaria	1025	1150
Belarus	1025	1150
FYR Macedonia	1025	1150
Serbia	1025	1150
Russia	1025	1150
Ukraine	1023	
Denmark	277-1	697-1 or 500-1/697-1
Finland	278-1	697-1 or 500-1/697-1
France	297-1	697-1 or 500-1/697-1
Germany	273-1	697-1 or 500-1/697-1

[1] Code Page Global Identifier

[2] Graphic Character Set Global Identifier

[3] If you require character set 1250 support, you must manually copy the PCS1250.FON file from the CD-ROM to the Personal Communications directory.

Table 11 (Page 2 of 2). Code Pages and Character Sets

Country	Host CPGID [1] GCSGID [2]
Greece	875/925
Iceland	871-1/697-1
Israel	941/424
Italy	280-1/697-1 or 500-1/697-1
Laos	1132
Latin America (Spanish)	284-1/697-1
Latin 2 (Multilingual)[3]	
Bosnia / Herzegovina (Latin)	870/959
Croatia	870/959
Czech Republic	870/959
Hungary	870/959
Poland	870/959
Romania (Moldavia)	870/959
Slovakia	870/959
Slovenia	870/959
Netherlands	037-1/697-1 or 500-1/697-1
Norway	277-1/697-1 or 500-1/697-1
Portugal	037-1/697-1 or 500-1/697-1
Spain	284-1/697-1 or 500-1/697-1
Sweden	278-1/697-1 or 500-1/697-1
Switzerland (French)	500-1/697-1
Switzerland (German)	500-1/697-1
Turkey	1026/1152
U.K.	285-1/697-1 or 500-1/697-1
U.S.	037-1/697-1 or 500-1/697-1
Vietnam	1130

DBCS Code Pages and Character Sets

The following tables show the host code pages for DBCS sessions.

Table 12. Japanese Code Pages and Character Sets (for 3270)

Language	Host CPGID [4] GCSGID [5] (1-byte code)	Host CPGID/GCSGID (2-byte code)	Host CCSID [6]
Japanese Katakana	290/332	300/370	00930
Japanese Latin Extended	1027/1172	300/370	00939
Japanese Katakana Extended	290/1172	300/370	00930

4 Code Page Global Identifier

5 Graphic Character Set Global Identifier

6 Coded Character Set Identifier

7 Requires OS/400 V3R1 or later

Table 13. Japanese Code Pages and Character Sets (for 5250)

Language	Host CPGID/GCSGID (1-byte code)	Host CPGID/GCSGID (2-byte code)	Host CCSID
Japanese Katakana	290/332	300/370	00930
Japanese English	037/101	300/370	00931
Japanese Latin Extended	1027/1172	300/370	00939 [7]

Table 14. Hangeul and Chinese Code Pages and Character Sets (for 3270 and 5250)

Language	Host CPGID/GCSGID (1-byte code)	Host CPGID/GCSGID (2-byte code)	Host CCSID
Hangeul	833/933	834/934	05029
Hangeul Extended	833/1173	834/934	00933
Simplified Chinese	836/936	837/937	05031
Simplified Chinese Extended	836/1174	837/937	00935
Traditional Chinese	037/101	835/935	05033
Traditional Chinese Extended	037/1175	835/935	00937

Host Code Page Tables

The following tables show the host code page for each country.

Host Code Page 037-1/697-1 Brazil, Canada, Netherlands, Portugal, U.S., and 037/1175 Traditional Chinese

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	ø LO610000	Ø LO620000	° SM190000	µ SM170000	^ SD150000	{ SM110000	} SM140000	\ SM070000	0 ND100000
-1	(RSP) SP300000	é LE110000	/ SP120000	É LE120000	a LA010000	j LJ010000	~ SD190000	£ SC020000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	ä LA170000	ë LE170000	Ä LA180000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	à LA130000	è LE130000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	§ SM240000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	å LA270000	ï LI170000	Å LA280000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	ç LC410000	ì LI130000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	ñ LN190000	ß LS610000	Ñ LN200000	` SD130000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	¢ SC040000	! SP020000	¦ SM650000	: SP130000	« SP170000	ª SM210000	¡ SP030000	[SM060000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	$ SC030000	, SP080000	# SM010000	» SP180000	º SM200000	¿ SP160000	] SM080000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	@ SM050000	ð LD630000	æ LA510000	Ð LD620000	¯ SM150000	ö LO170000	ü LU170000	Ö LO180000	Ü LU180000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	Ý LY120000	¨ SD170000	ò LO130000	ù LU130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	Æ LA520000	Þ LT640000	´ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	| SM130000	¬ SM660000	? SP150000	" SP040000	± SA020000	¤ SC010000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 00037

Host Code Page 103/1047 Latin 1 (Open Systems)

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	ø LO610000	Ø LO620000	° SM190000	µ SM170000	¬ SM660000	{ SM110000	} SM140000	\ SM070000	0 ND100000
-1	(RSP) SP300000	é LE110000	/ SP120000	É LE120000	a LA010000	j LJ010000	~ SD190000	£ SC020000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	ä LA170000	ë LE170000	Ä LA180000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	à LA130000	è LE130000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	§ SM240000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	å LA270000	ï LI170000	Å LA280000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	ç LC410000	ì LI130000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	ñ LN190000	ß LS610000	Ñ LN200000	` SD130000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	¢ SC040000	! SP020000	¦ SM650000	: SP130000	« SP170000	ª SM210000	¡ SP030000	Ý LY120000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	$ SC030000	, SP080000	# SM010000	» SP180000	º SM200000	¿ SP160000	¨ SD170000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	@ SM050000	ð LD630000	æ LA510000	Ð LD620000	¯ SM150000	ö LO170000	ü LU170000	Ö LO180000	Ü LU180000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	[SM060000	] SM080000	ò LO130000	ù LU130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	Æ LA520000	Þ LT640000	´ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	| SM130000	^ SD150000	? SP150000	" SP040000	± SA020000	¤ SC010000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 01047

Host Code Page 273-1/697-1 Austria, Germany

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	ø LO610000	Ø LO620000	° SM190000	µ SM170000	¢ SC040000	ä LA170000	ü LU170000	Ö LO180000	0 ND100000
-1	(RSP) SP300000	é LE110000	/ SP120000	É LE120000	a LA010000	j LJ010000	ß LS610000	£ SC020000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	{ SM110000	ë LE170000	[SM060000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	à LA130000	è LE130000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	@ SM050000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	å LA270000	ï LI170000	Å LA280000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	ç LC410000	ì LI130000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	ñ LN190000	~ SD190000	Ñ LN200000	` SD130000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	Ä LA180000	Ü LU180000	ö LO170000	: SP130000	« SP170000	ª SM210000	¡ SP030000	¬ SM660000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	$ SC030000	, SP080000	# SM010000	» SP180000	º SM200000	¿ SP160000	| SM130000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	§ SM240000	ð LD630000	æ LA510000	Ð LD620000	¯ SM150000	¦ SM650000	} SM140000	\ SM070000	] SM080000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	Ý LY120000	¨ SD170000	ò LO130000	ù LU130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	Æ LA520000	Þ LT640000	´ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	! SP020000	^ SD150000	? SP150000	" SP040000	± SA020000	¤ SC010000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 00273

Host Code Page 277-1/697-1 Denmark, Norway

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	¦ SM650000	@ SM050000	° SM190000	µ SM170000	¢ SC040000	æ LA510000	å LA270000	\ SM070000	0 ND100000
-1	(RSP) SP300000	é LE110000	/ SP120000	É LE120000	a LA010000	j LJ010000	ü LU170000	£ SC020000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	ä LA170000	ë LE170000	Ä LA180000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	à LA130000	è LE130000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	§ SM240000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	} SM140000	ï LI170000	$ SC030000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	ç LC410000	ì LI130000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	ñ LN190000	ß LS610000	Ñ LN200000	` SD130000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	# SM010000	¤ SC010000	ø LO610000	: SP130000	« SP170000	ª SM210000	¡ SP030000	¬ SM660000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	Å LA280000	, SP080000	Æ LA520000	» SP180000	º SM200000	¿ SP160000	| SM130000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	Ø LO620000	ð LD630000	{ SM110000	Ð LD620000	¯ SM150000	ö LO170000	~ SD190000	Ö LO180000	Ü LU180000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	Ý LY120000	¨ SD170000	ò LO130000	ù LU130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	[SM060000	Þ LT640000	´ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	! SP020000	^ SD150000	? SP150000	" SP040000	± SA020000	] SM080000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 00277

Host Code Page 278-1/697-1 Finland, Sweden

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	ø LO610000	Ø LO620000	° SM190000	µ SM170000	¢ SC040000	ä LA170000	å LA270000	É LE120000	0 ND100000
-1	(RSP) SP300000	` SD130000	/ SP120000	\ SM070000	a LA010000	j LJ010000	ü LU170000	£ SC020000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	{ SM110000	ë LE170000	# SM010000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	à LA130000	è LE130000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	[SM060000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	} SM140000	ï LI170000	$ SC030000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	ç LC410000	ì LI130000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	ñ LN190000	ß LS610000	Ñ LN200000	é LE110000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	§ SM240000	¤ SC010000	ö LO170000	: SP130000	« SP170000	ª SM210000	¡ SP030000	¬ SM660000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	Å LA280000	, SP080000	Ä LA180000	» SP180000	º SM200000	¿ SP160000	| SM130000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	Ö LO180000	ð LD630000	æ LA510000	Ð LD620000	¯ SM150000	¦ SM650000	~ SD190000	@ SM050000	Ü LU180000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	Ý LY120000	¨ SD170000	ò LO130000	ù LU130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	Æ LA520000	Þ LT640000	´ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	! SP020000	^ SD150000	? SP150000	" SP040000	± SA020000	] SM080000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 00278

Host Code Page 280-1/697-1 Italy

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	ø LO610000	Ø LO620000	[SM060000	µ SM170000	¢ SC040000	à LA130000	è LE130000	ç LC410000	0 ND100000
-1	(RSP) SP300000	] SM080000	/ SP120000	É LE120000	a LA010000	j LJ010000	ì LI130000	# SM010000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	ä LA170000	ë LE170000	Ä LA180000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	{ SM110000	} SM140000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	@ SM050000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	å LA270000	ï LI170000	Å LA280000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	\ SM070000	~ SD190000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	ñ LN190000	ß LS610000	Ñ LN200000	ù LU130000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	° SM190000	é LE110000	ò LO130000	: SP130000	« SP170000	ª SM210000	¡ SP030000	¬ SM660000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	$ SC030000	, SP080000	£ SC020000	» SP180000	º SM200000	¿ SP160000	| SM130000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	§ SM240000	ð LD630000	æ LA510000	Ð LD620000	¯ SM150000	ö LO170000	ü LU170000	Ö LO180000	Ü LU180000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	Ý LY120000	¨ SD170000	¦ SM650000	` SD130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	Æ LA520000	Þ LT640000	′ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	! SP020000	^ SD150000	? SP150000	" SP040000	± SA020000	¤ SC010000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 00280

Host Code Page 284-1/697-1 Latin America, Spain

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-
-0	(SP) SP010000	& SM030000	- SP100000	ø LO610000	Ø LO620000	° SM190000	µ SM170000	¢ SC040000	{ SM110000	} SM140000	\ SM070000	0 ND100000
-1	(RSP) SP300000	é LE110000	/ SP120000	É LE120000	a LA010000	j LJ010000	¨ SD170000	£ SC020000	A LA020000	J LJ020000	÷ SA060000	1 ND010000
-2	â LA150000	ê LE150000	Â LA160000	Ê LE160000	b LB010000	k LK010000	s LS010000	¥ SC050000	B LB020000	K LK020000	S LS020000	2 ND020000
-3	ä LA170000	ë LE170000	Ä LA180000	Ë LE180000	c LC010000	l LL010000	t LT010000	• SD630000	C LC020000	L LL020000	T LT020000	3 ND030000
-4	à LA130000	è LE130000	À LA140000	È LE140000	d LD010000	m LM010000	u LU010000	© SM520000	D LD020000	M LM020000	U LU020000	4 ND040000
-5	á LA110000	í LI110000	Á LA120000	Í LI120000	e LE010000	n LN010000	v LV010000	§ SM240000	E LE020000	N LN020000	V LV020000	5 ND050000
-6	ã LA190000	î LI150000	Ã LA200000	Î LI160000	f LF010000	o LO010000	w LW010000	¶ SM250000	F LF020000	O LO020000	W LW020000	6 ND060000
-7	å LA270000	ï LI170000	Å LA280000	Ï LI180000	g LG010000	p LP010000	x LX010000	¼ NF040000	G LG020000	P LP020000	X LX020000	7 ND070000
-8	ç LC410000	ì LI130000	Ç LC420000	Ì LI140000	h LH010000	q LQ010000	y LY010000	½ NF010000	H LH020000	Q LQ020000	Y LY020000	8 ND080000
-9	¦ SM650000	ß LS610000	# SM010000	` SD130000	i LI010000	r LR010000	z LZ010000	¾ NF050000	I LI020000	R LR020000	Z LZ020000	9 ND090000
-A	[SM060000	] SM080000	ñ LN190000	: SP130000	« SP170000	ª SM210000	¡ SP030000	^ SD150000	(SHY) SP320000	1 ND011000	2 ND021000	3 ND031000
-B	. SP110000	$ SC030000	, SP080000	Ñ LN200000	» SP180000	º SM200000	¿ SP160000	! SP020000	ô LO150000	û LU150000	Ô LO160000	Û LU160000
-C	< SA030000	* SM040000	% SM020000	@ SM050000	ð LD630000	æ LA510000	Ð LD620000	¯ SM150000	ö LO170000	ü LU170000	Ö LO180000	Ü LU180000
-D	(SP060000	) SP070000	_ SP090000	' SP050000	ý LY110000	¸ SD410000	Ý LY120000	~ SD190000	ò LO130000	ù LU130000	Ò LO140000	Ù LU140000
-E	+ SA010000	; SP140000	> SA050000	= SA040000	þ LT630000	Æ LA520000	Þ LT640000	′ SD110000	ó LO110000	ú LU110000	Ó LO120000	Ú LU120000
-F	| SM130000	¬ SM660000	? SP150000	" SP040000	± SA020000	¤ SC010000	® SM530000	× SA070000	õ LO190000	ÿ LY170000	Õ LO200000	(EO)

Code Page 00284

Host Code Page 285-1/697-1 United Kingdom

The column indicates the first digit and the row indicates the second digit.

HEX DIGITS 1ST → 2ND ↓	4-	5-	6-	7-	8-	9-	A-	B-	C-	D-	E-	F-