



Microsoft® Press



CD-ROM

Microsoft® **Host Integration Server 2000** **资源大全**

(影印版)

Microsoft®
**Host Integration
Server 2000**
**Resource
Kit**

- 融汇Microsoft Host Integration Server 2000产品组的智慧和经验
- 提供综合性的技术信息和工具
- 系统集成人员必备的专业指南

IT Professional

北京大学出版社
<http://cbs.pku.edu.cn>

Microsoft® 公司 著

Microsoft Host Integration Server 2000 资源大全 (影印版)

Microsoft 公司 著

北京大学出版社

内 容 简 介

来自不同供应商的系统之间的集成是很复杂的。本书对 Host Integration Server 2000 作了详细的讲解, 并提供了系统集成人员所需的最新技术信息和软件工具, 大大简化了 Windows 2000 与不同的应用程序、数据和网络的集成, 缩短了处理时间。

本书内容直接取自产品开发组人员, 是系统集成人员必备的参考书。

Copyright (2000) by Microsoft Corporation

Original English language edition Copyright © 2000 (year of first publication by author)

By Microsoft Corporation (author)

All rights published by arrangement with the original publisher, Microsoft Press, a division of Microsoft Corporation, Redmond, Washington, U.S.A.

著作权合同登记号: 图字 01-2001-0047 号

书 名: Microsoft Host Integration Server 2000 资源大全(影印版)

责任著作者: Microsoft 公司 著

标准书号: ISBN 7-900632-16-6/TP • 13

出版者: 北京大学出版社

地址: 北京市海淀区中关村北京大学校内 100871

网址: <http://cbs.pku.edu.cn>

电话: 出版部 62752015 发行部 62765127 62754140 编辑部 62765126

电子邮箱: wdzh@mail.263.net.cn

印刷者: 北京大学印刷厂

发行者: 北京大学出版社

经销者: 新华书店

787 毫米×1092 毫米 16 开本 73.125 印张 1780 千字

2001 年 2 月第 1 版 2001 年 2 月第 1 次印刷

定价: 188.00 元(含光盘)

出版前言

如果用—个成语来概括国内计算机图书市场的现状，当谓之“汗牛充栋”。然而，如果您是一位从事计算机应用系统开发或管理的中、高级专业人士，很可能发现这貌似种类齐全的计算机图书中，为您量身定做的并不多见。

依据多年从事计算机图书工作所积累的经验，以及与 IT 领域广泛而深入的接触所获取的信息，我们认识到，具有相当的专业深度和技术前沿性的图书，是计算机专业人员的迫切需要，当然，也是我们从事计算机图书工作、服务专业领域的一大着眼点。

基于这一点，2000 年元月，我们与微软出版社(Microsoft Press)达成合作协议，成立微软图书影印中心，独家代理微软出版社图书影印版在中国大陆的出版、发行，为 IT 业界提供及时的专业技术服务。选题和策划上的匠心独运，使得我们的影印书成为计算机图书中的标新立异者。这里，有四大特色值得读者朋友予以关注：

首先，这是微软出版社第一次授权在中国大陆影印、发行它的版权书。在选题上，可以说独辟蹊径。在内容上，立足技术广度和深度，系统推介微软产品。所有这些，都是目前国内一般计算机图书所无法比拟的。

其次，我们的理念是为国内计算机专业人员学习前沿性的微软技术服务。为此，我们不但与微软公司紧密协作与沟通，及时掌握微软最新技术动向，而且组织了精干的工作人员，倾力于微软影印书的出版和发行。

再者，微软影印书主要面向中、高级专业人员，印量有限。这类书的读者对象有较强的针对性，一般来说，包括 IT 决策人员，中、高级开发人员，以及中、高级系统管理人员。因而，我们将每套书的印数控制在 1000~2000 册之间。

最后，微软图书影印版几乎与原版书保持同步发行，最大限度地满足了国内读者跟踪微软最新技术的需求。软件升级越来越快，新软件令人目不暇接。作为技术载体之一的图书，只有迅速作出反应，把新软件介绍给读者，才能赢得他们的青睐。总之，兵贵神速，这是我们的目标。

正应验了前人的预言，21 世纪是一个信息时代。软件作为信息系统的神经，在我们生活的这个时代里发挥着举足轻重的作用，而微软公司和它推出的各种软件，更是令世人为之瞩目。我们将立足图书，继续并扩大与微软公司的合作，在中国信息产业的发展道路上留下自己的足迹。

出版者

2000 年 10 月

Table of Contents

PART ONE Overview	1
CHAPTER 1 Understanding Host Integration Server 2000	3
About This Resource Kit	3
Appendixes	4
What is Host Integration Server 2000?	4
Documentation Roadmap	6
Contents	6
Services for the Mainframe Environment	7
Services for the AS/400 Environment	11
Troubleshooters	11
Introduction to Application Integration Services	12
COM Transaction Integrator	13
MSMQ-MQSeries Bridge	14
Introduction to Data Integration Services	15
OLE DB Provider for AS/400	16
OLE DB Provider for VSAM	17
OLE DB Provider for DB2	18
ODBC Driver for DB2	18
Network Integration Services	19
Host Services	20
Administrative Services	20
Host Integration Server 2000 Software Development Kit	21
Software Development Kit	21
Additional Resources	21
CHAPTER 2 Overview of Host Integration Server 2000 Components	23
Introduction	23
Today's Web Solutions	24
Host Integration Server 2000 Components	26
Host Interoperability Layers	27
The Data Integration Layer	28
Relational Database Access	29
Record File Access	31
File Transfer	32
AS/400 Data Queue Access	33

Application Integration Layer	34
Transaction Processing	34
Management Layer	38
Host Integration Server 2000 Server Installation	39
Host Integration Server 2000 Server Configuration	40
Host Integration Server 2000 Client Installation	40
Host Integration Server 2000 Client Configuration	41
Host Integration Server Network Resource Management	42
Host Integration Server 2000 Management Tools	42
Host Security Integration	45
Network Integration Layer	47
Host Integration Server 2000 Software Architecture	49
Server Architecture	49
Client Architecture	50
Server Deployment Models	51
Centralized Deployment Model	52
Branch Deployment Model	53
Distributed Deployment Model	54
Network Protocols	56
Server to Host Protocols	57
Client to Server Protocols	57
Server-to-Server Protocols	58
Terminal Emulation Services	58
Summary	60
PART TWO Planning	61
CHAPTER 3 Planning for SNA Services	63
SNA Service	63
Communication Between Host Integration Server 2000 Computers and a Host Computer	63
Physical Unit (PU)	65
Logical Unit (LU)	65
Choosing a Connection Type	67
Communication Between Multiple Host Integration Server 2000 Computers	71
Configuring a Server Broadcast	73
Communication Between Host Integration Server 2000 Computers and Client Computers	73
Host Integration Server 2000 Client and SNA Communications	74
CHAPTER 4 Planning for Application Integration Using COMTI	77
Introduction to COM and COM+	78

Microsoft Transaction Server	78
Component Services	79
Component Services Features Used by COMTI	79
COMTI Components	82
Transactions Supported by COMTI	87
Separation of Business Logic from Presentation	87
Data Types Supported by COMTI	88
Supported Automation Data Types	88
Supported COM Aggregate Data Types	89
Supported COBOL Data Types	90
Supported COBOL Data Constructs	92
COMTI Data Type Conversion	92
COMTI Programming Models	92
Supported Conversational Model	93
Support for Transactions and Two-Phase Commit	93
Mainframe Transaction Terminology	95
Summary Prerequisites for Two-Phase Commit	96
Communication Models and Data Flows	97
Supported Data Flow Models	98
Non-Transactional Data Flows That Support Bounded Recordsets	99
Non-Transactional Data Flows That Support Unbounded Recordsets	100
Transactional Data Flows That Support Bounded Recordsets	100
Transactional Data Flows That Support Unbounded Recordsets	102
CICS LINK Using LU 6.2	102
CICS Using LU 6.2	103
IMS Using LU 6.2	104
Iterative vs. Concurrent TCP/IP Models	105
CICS Concurrent Server (TCP/IP)	108
CICS MS Link (TCP/IP)	109
IMS Implicit (TCP/IP)	111
IMS Explicit (TCP/IP)	112
IMS TCP/IP OTMA Connection (ITOC)	113
Planning for COMTI Administration	118
The COMTI Administration Process	118
COMTI Management Information	118
Security Considerations Using COMTI	119
Application-Level (or Package-Level) Security	119
User-Level Security	120
Allow Application to Override Selected Authentication	120

Using Explicit Security	121
CHAPTER 5 Planning MSMQ and MQSeries Bridging	123
How MSMQ-MQSeries Bridge Works	123
MSMQ-MQSeries Bridge Concepts	123
Message Queuing Concepts	124
Message Fields or Properties	124
Sending and Receiving Messages	124
System Components	125
Message Conversion	125
Network Architecture	126
Multiple Connections	127
Sending Messages From MSMQ to MQSeries	128
Sending Messages From MQSeries to MSMQ	129
Transactional and Non-Transactional Message Pipes	130
CHAPTER 6 Planning 3270 Connectivity	133
Planning 3270 Connectivity	133
3270 Access	133
Deployment Strategies	134
TN3270 Access	137
Deployment Strategies	138
Downstream Connections	139
Deployment Strategies	140
CHAPTER 7 Planning APPC Applications	141
Planning APPC Connectivity	141
Understanding Peer-to-Peer Networking	141
Understanding CPI-C	144
APPC Applications	145
5250 Access	145
TN5250 Access	146
File Transfers	147
APPC Deployment Strategies	149
Using Independent APPC LUs	150
Using Dependent APPC LUs	150
Choosing Modes	150
Using LU Pools	151
Configuring LUs	152
Providing Hot Backup	152

Choosing IP Settings	153
CHAPTER 8 Planning 5250 Connectivity	155
5250 Access	155
TN5250 Access	156
CHAPTER 9 Planning Host Printing	157
Host Print Services	157
Mainframe Printing	158
AS/400 (APPC) Printing	159
Host Print Transform (HPT)	159
Customizing Printing	160
Printer Definition Files	161
Custom Host Code Page	161
Programming Print Filters	162
Capacity Planning for Host Printing	162
PART THREE Deployment	163
CHAPTER 10 Deploying SNA Services	165
Deployment	165
SNA Open Gateway Architecture	165
Trends in PC-to-Host Connectivity	166
Deploying Host Integration Server 2000	168
Choosing a Deployment Model	168
Branch Deployment Model	169
Advantages	170
Disadvantages	170
Centralized Deployment Model	171
Advantages	172
Disadvantages	172
Distributed Deployment Model	173
Advantages	174
Disadvantages	174
Grouping Servers	174
Understanding Domains	175
Organizing Host Integration Server 2000 Subdomains	176
Determining Server Roles	177
Connecting Servers	178
Understanding Connection Methods	179

Data Link Control (DLC) 802.2	179
Synchronous Data Link Control (SDLC)	180
X.25/QLLC	181
Distributed Function Terminal (DFT)	181
Twinax	181
Channel	182
Choosing Server-to-Host Connections	184
Mainframe Connection Summary	185
AS/400 Connection Summary	187
Choosing Network Protocols for Host Integration Server 2000	189
Choosing Client/Server Network Protocols	191
Choosing Server/Server Network Protocols	191
Installing Host Integration Server 2000 Clients	193
CHAPTER 11 Deploying COMTI for Application Integration	195
COMTI Defined	195
COM and COMTI Components	197
Viewing COM Classes, Interfaces, and Methods	198
Windows Scripting Host COM Client	199
How COMTI Associates a Method with a TP	200
How COMTI Enables TPs to Return Exceptions	200
COMTI Component Builder	202
COMTI Component Builder Icons	204
Using COMTI Component Builder	204
Printing a Component Description	205
Create and Manage COMTI Components	205
Configure COMTI Component Builder as a Visual Basic Add-In	205
Configure COMTI Component Builder as a Visual Studio Add-In	206
Avoid Reserved Words	206
Start COMTI Component Builder	208
Create a New COMTI Component	208
Import a COMTI Component	210
Import COBOL into a COMTI Component	210
Export COBOL from a COMTI Component	211
Add a COMTI Component to a COM+ Application (or MTS Package)	211
Set or View Component Properties	212
Set a COMTI Component's Transaction Property	213
Print a Component Description	215
Data Type Support using Component Builder	215

Data Type Conversion using Component Builder	216
Converting Data Types from Automation to COBOL	217
Converting Data Types from COBOL to Automation	221
COBOL Display or Packed Decimal Data Types	225
Integer Data Type	225
Decimal Data Type in Visual Basic	225
Variant Data Type	226
Recordsets	226
Example Recordset	227
Fixed-Size Recordsets	228
Bounded Recordsets	228
Unbounded Recordsets	229
RDS Recordset Requirements for Web Clients	230
Recordset Creation When Importing COBOL	230
Arrays	232
Visual Basic and Arrays	233
User-Defined Data Types (UDTs)	234
Requirements for UDT Support	235
Using COMTI Component Builder to Create UDTs	235
Creating UDTs By Importing COBOL	236
Using Variably Sized Strings and Bounded Arrays in UDT Parameters	236
Arrays Defined in UDTs with Visual Basic	237
Host and Automation Data	238
Variably Sized Data	238
Parameter Requirements	238
Optional Meta Data	239
Return Value Positioning	241
Data Transfer Options	242
Using the OCCURS DEPENDING Clause to Define Variable-Length Table	242
Using Variably Sized Strings	244
Using Variably Sized Rows	245
Using Bounded Final Fields	247
Mainframe Character Strings and Code Pages	249
IBM DBCS Code Pages	249
Mainframe Character Formats	250
Padding Mainframe Character Strings with Spaces	252
Truncating Undefined Portions of Strings	256
Adding Leading SO and Trailing SI Characters	256
COBOL Grammar	257

Alignment Problems with Generated COBOL	259
Filler	259
COBOL FILLER	259
COMTI Application Cannot Reference FILLER	259
Using REDEFINES in COBOL	261
FILLER Optimization	262
FILLER for Discontiguous Output and Return Value	263
Variable-Length Tables and CICS LINK	264
Sending Binary Data to the Host	264
CHAPTER 12 Deploying MSMQ and MQSeries Bridge	265
MSMQ-MQSeries Bridge Setup and Configuration	265
MSMQ-MQSeries Bridge Setup Requirements	265
Minimal Configuration	266
Where you should work	266
Gather Required Information	267
MSMQ-MQSeries Bridge Prerequisites	267
MSMQ-MQSeries Bridge Platforms	268
Prerequisites for Windows NT 4.0 Computers	268
Prerequisites for Windows 2000 Computers	269
Prerequisites for the MQSeries Computer	269
MSMQ-MQSeries Bridge Properties	269
General Tab	270
Advanced Tab	270
MQI Channels Tab	271
Before Adding a CN	272
Adding a CN	272
Deleting a CN	272
Setting CN Properties	273
General Tab – CN	273
Setting Message Pipe Properties	274
General Tab – Message Pipe	274
Batch Tab	275
Cache Tab	275
Retry Tab	276
Choose Names for MSMQ and MQSeries Entities	276
MSMQ Names	276
MQSeries Names	277
Installing and Configuring MSMQ-MQSeries Bridge	277

Install the MSMQ-MQSeries Bridge Software	278
Transport Considerations	279
Configuring MSMQ-MQSeries Bridge on Windows 2000	279
Define a Foreign Site in Windows 2000	281
Add a Foreign Computer Representing MQSeries in Windows 2000	281
Set the Foreign Site Permission in Windows 2000	281
Create a Foreign Queue in Windows 2000	282
Define a Connected Network in Windows NT 4.0	283
Add a Foreign Computer Representing MQSeries in Windows NT 4.0	283
Connect to the MSMQ-MQSeries Bridge in Windows NT 4.0	284
Set the Connected Network Permission in Windows NT 4.0	284
Create a Foreign Queue in Windows NT 4.0	284
Define an MQI Channel	285
Add the CN	285
Disable the Message Pipes	286
Export an MQSeries Server Definition File	286
Export an MQSeries Client Definition File	286
Run the MQSeries Server Definition File	287
Run the MQSeries Client Definition File	287
Configure the MQSeries Client	287
Test the Installation	288
Create the Test Queues	288
Test the MQSeries Client Definitions	289
Start the MSMQ-MQSeries Bridge	290
Send Test Messages from MSMQ to MQSeries	290
Send Test Messages from MQSeries to MSMQ	291
Typical Configuration	291
Diagram of Typical Configuration	291
Settings for a Typical Configuration	292
MSMQ-MQSeries Bridge Manager	293
About MSMQ-MQSeries Bridge Manager	294
MSMQ-MQSeries Bridge Manager Display	294
MSMQ-MQSeries Bridge Manager Properties	294
Icons for MSMQ-MQSeries Bridge Manager Objects	295
Column Display Options for the MSMQ-MQSeries Bridge Manager	296
MSMQ-MQSeries Bridge Display	296
CN Display	297
Message Pipe Display	297
Customizing the Column Display	297

Right-Button Menu of the MSMQ-MQSeries Bridge Manager	298
Status Bar	298
CHAPTER 13 MSMQ-MQSeries Bridge Configuration Guide	299
Introduction	299
Definitions	300
How the Bridge Works	303
Sending messages from MSMQ to MQSeries Queues	305
Configuration 1	310
Configuration 2	310
SNA Configurations	310
MSMQ Considerations	312
Recommended Configuration	312
Software Installation Order	312
Licensing	314
Configuring MSMQ-MQSeries Bridge on Windows NT 4.0	315
Configuring MSMQ 1.0	315
Define a Foreign Connected Network	315
Add the MSMQ Server to the Foreign Connected Network	316
Define the MQSeries Queue Managers	317
Define the MQSeries Queues	318
Configuring MSMQ-MQSeries Bridge	319
Define an MQI Channel	319
Add a Foreign Connected Network to the MSMQ-MQSeries Bridge	320
Message Pipes	321
Export the MQSeries Definition Files	322
Backup the Configuration	323
Configuring MQSeries	323
Importing the Server Definition File	324
Importing the Client Definition Files	324
Transport Considerations	325
Configuring Security	326
Testing the Configuration	327
Sample Programs	327
MQSeries Command Console	328
Testing the MQSeries Client	328
Testing MQSeries Client to Queue Manager Communication	329
Testing MSMQ Connectivity	330
Sending MSMQ Messages to MQSeries	330

Sending MQSeries Messages to MSMQ	332
Managing and Monitoring the Bridge	334
MSMQ-MQSeries Bridge Explorer	334
Performance Monitor Counters	334
Configuring MSMQ-MQSeries Bridge on Windows 2000	334
MSMQ 2.0 & MSMQ-MQSeries Bridge	335
Configuring MSMQ 2.0	336
Define a Foreign Site	336
Define the MQSeries Queue Managers	337
Define the MQSeries Queues	337
Create a Routing Link	337
Define a Site Gate	338
Add the MSMQ Server to the Foreign Site	338
Modify Permissions for the Foreign Site	338
Fault Tolerance and Load-Balancing	339
Programming Topics	340
From MSMQ to MQSeries	340
From MQSeries to MSMQ	341
Sample Program	342
Message Persistence	342
From MSMQ to MQSeries	342
From MQSeries to MSMQ	342
Transactions through the Bridge	343
Unicode, ASCII, EBCDIC and MSMQ Body Types	343
From MSMQ to MQSeries	343
From MQSeries to MSMQ	344
MSMQ Delivery Type and Journal Message Properties	344
Additional Information	345
MQSeries Definitions Explained	345
Client Definition File	346
Server Definition File	346
Configuring MQ Series to Send Messages to Specific MSMQ Queues	348
MSMQ-MQSeries Bridge Queues	349
Public Queues	349
Private Queues	350
Limitations	350
Encryption	350
MSMQ Message Body Size	350
MSMQ Message Body Type	351

Dead Letter Queue Notifications	351
CHAPTER 14 Deploying Data Access	353
Data Integration Features	353
Developing Applications for Data Access and File Transfer	353
Data Access and Data Tools	355
OLE DB Provider for AS/400 and VSAM	355
Goals of the OLE DB Provider for AS/400 and VSAM	355
DDM Record-Level Access	356
Platforms Supported by the OLE DB Provider for AS/400 and VSAM	357
File and Record Attributes	358
Data Sources for the OLE DB Provider for AS/400 and VSAM	359
OLE DB Provider for DB2	360
Goals of the OLE DB Provider for DB2	360
Distributed Relational Database Architecture	361
Platforms Supported by the OLE DB Provider for DB2	362
Data Sources for the OLE DB Provider for DB2	364
ODBC Driver for DB2	364
Goals of the ODBC Driver for DB2	365
ODBC Driver for DB2 Architecture	365
Platforms Supported by the ODBC Driver for DB2	365
Data Sources for the ODBC Driver for DB2	366
Data Queue ActiveX Control	366
Advantages of Data Queues	367
Platforms Supported by the Data Queue ActiveX Control	368
File Transfer Tools	368
Host File Transfer ActiveX Control	368
Platforms Supported by the Host File Transfer ActiveX Control	369
Data Descriptions for Host File Transfer	370
Developing Applications for Host File Transfer	371
APPC File Transfer Protocol	371
Shared Folders Gateway Service	372
Providing for Shared Folders Access	373
Using the Shared Folders Service	374
CHAPTER 15 Deploying 3270 Connectivity	377
Centralized Deployment Model	377
Advantages	378
Disadvantages	378

Understanding Connection Methods	379
Distributed Function Terminal (DFT)	379
Mainframe Connection Summary	379
Installing Host Integration Server 2000 Clients	381
CHAPTER 16 Deploying APPC Applications	383
Centralized Deployment Model	383
Advantages	384
Disadvantages	384
Choosing Server-to-Host Connections	385
Mainframe Connection Summary	386
AS/400 Connection Summary	387
CHAPTER 17 Preparing AS/400 Environment	389
CHAPTER 18 Deploying 5250 Connectivity	399
APPC Deployment Strategies	399
Using Independent APPC LUs	399
Using Dependent APPC LUs	400
Choosing Modes	400
Using LU Pools	401
Configuring LUs	401
Providing Hot Backup	402
Choosing IP Settings	403
CHAPTER 19 Deploying Host Printing	405
Installing Host Printing	405
Configuring Mainframe Printing	405
LU 3 Printing	406
Command Code	406
Write Control Character (WCC)	407
Format Control Orders	407
3270 Orders	408
Data	408
LU 1 Printing	410
Data Stream Flags	410
SCS Codes	411
Configuring AS/400 Printing	415
SCS Codes	415
Custom Host Code Page	417