

Contents

Foreword	xxiii
Preface	xxv
Chapter 1 What Is Certification and Accreditation? . . . 1	
Introduction	2
Terminology	3
Audit and Report Cards	6
A Standardized Process	7
Templates, Documents, and Paperwork	8
Certification and Accreditation Laws Summarized	9
Summary	10
Notes	11
Chapter 2 Types of Certification and Accreditation . . . 13	
Introduction	14
The NIACAP Process	15
The NIST Process	16
NIACAP and NIST Phases, Differences, and Similarities	16
NIACAP and NIST Compared	17
DITSCAP	18
DCID 6/3	19
The Common Denominator of All C&A Methodologies	20
C&A for Private Enterprises	21
Summary	23
Notes	23
Chapter 3 Understanding the Certification and Accreditation Process 25	
Introduction	26
Recognizing the Need for C&A	26
Roles and Responsibilities	27
Chief Information Officer	27
Authorizing Official	29
Senior Agency Information Security Officer	30

Senior Agency Privacy Official	31
Certification Agent/Evaluation Team	31
Business Owner	33
System Owner	33
Information Owner	33
Information System Security Officer	34
C&A Preparers	35
Agency Inspectors	35
GAO Inspectors	36
Levels of Audit	36
Stepping through the Process	37
The Initiation Phase	37
The Certification Phase	40
The Accreditation Phase	41
The Continuous Monitoring Phase	42
Summary	44
Chapter 4 Establishing a C&A Program.	45
Introduction	46
C&A Handbook Development	46
What to Include in Your Handbook	47
Who Should Write the Handbook?	48
Template Development	48
Provide Package Delivery Instructions	50
Create an Evaluation Process	51
Authority and Endorsement	51
Improve Your C&A Program Each Year	52
Problems of Not Having a C&A Program	52
Missing Information	52
Lack of Organization	53
Inconsistencies in the Evaluation Process	53
Unknown Security Architecture and Configuration	53
Unknown Risks	54
Laws and Report Cards	54
Summary	55

Chapter 5 Developing a Certification Package	57
Introduction	58
Initiating Your C&A Project	58
Put Together a Contact List	58
Hold a Kick-Off Meeting	59
Obtain Any Existing Agency Guidelines	60
Analyze Your Research	61
Preparing the Documents	61
It's Okay to Be Redundant	62
Different Agencies Have Different Requirements	62
Including Multiple Applications and Systems in One Package	63
Verify Your Information	64
Retain Your Ethics	64
Summary	66
Chapter 6 Preparing the Hardware and Software Inventory	67
Introduction	68
Determining the Accreditation Boundaries	68
Collecting the Inventory Information	70
Structure of Inventory Information	71
Delivery of Inventory Document	72
Summary	74
Chapter 7 Determining the Certification Level	75
Introduction	76
What Are the C&A Levels?	76
Level 1	76
Level 2	77
Level 3	77
Level 4	78
Importance of Determining the C&A Level	79
Don't Make This Mistake	79
Criteria to Use for Determining the Levels	81
Confidentiality, Integrity, and Availability	81
Confidentiality	82

Determining the Confidentiality Level	83
Integrity	84
Determining the Integrity Level	84
Availability	85
Determining the Availability Level	86
How to Categorize Multiple Data Sets	86
Impact Levels and System Criticality	87
System Attribute Characteristics	89
Interconnection State (Interfacing Mode)	89
Access State (Processing Mode)	90
Accountability State (Attribution Mode)	91
Mission Criticality	92
Determining Level of Certification	93
Template for Levels of Determination	94
Rationale for the Security Level Recommendation	97
Process and Rationale for the C&A Level Recommendation	99
The Explanatory Memo	102
Template for Explanatory Memo	103
Summary	105
Chapter 8 Performing and Preparing the Self-Assessment	107
Introduction	108
Objectives	108
Designing the Survey	109
Levels of Compliance	109
Management Controls	111
Operational Controls	112
Technical Controls	113
Correlation with Security Policies and Laws	113
Answering the Questions	114
Questions for Self-Assessment Survey	116
Summary	137
Notes	138
Chapter 9 Addressing Security Awareness and Training Requirements	139
Introduction	140

Purpose of Security Awareness and Training	140
Security Training	141
Security Awareness	142
The Awareness and Training Message	142
Online Training Makes It Easy	144
Document Your Plan	144
Security Awareness and Training Checklist	145
Security Awareness Material Evaluation	145
Security Awareness Class Evaluation	147
Summary	148
Notes	148
Chapter 10 Addressing End-User Rules of Behavior	149
Introduction	150
Implementing Rules of Behavior	150
What Rules to Include	151
Rules for Applications, Servers, and Databases	151
Additional Rules for Handhelds	152
Additional Rules for Laptops and Desktop Systems	153
Additional Rules for Privileged Users	154
Consequences of Noncompliance	155
Rules of Behavior Checklist	155
Summary	156
Chapter 11 Addressing Incident Response	157
Introduction	158
Purpose and Applicability	158
Policies and Guidelines	159
Reporting Framework	160
Roles and Responsibilities	162
Agency CSIRC	162
Information System Owner and ISSO	163
Incident Response Manager	164
Definitions	165
Incident	165
Impact, Notification, and Escalation	166
Incident Handling	168

Detecting an Incident	169
Containment and Eradication	171
Recovery and Closure	172
Forensic Investigations	173
Incident Types	176
Incident Response Plan Checklist	180
Security Incident Reporting Form	181
Summary	183
Additional Resources	183
Incident Response Organizations	183
Additional Resources	184
Articles and Papers on Incident Response	185
Notes	186
Chapter 12 Performing the Security Tests and Evaluation	187
Introduction	188
Types of Security Tests	188
Confidentiality Tests	189
Integrity Tests	191
Availability Tests	192
Types of Security Controls	193
Management Controls	193
Operational Controls	194
Technical Controls	194
Testing Methodology and Tools	194
Algorithm Testing	197
Code and Memory Analyzers	198
Network and Application Scanners	199
Port Scanners	200
Port Listeners	201
Modem Scanners	201
Wireless Network Scanner	202
Wireless Intrusion Detection Systems	202
Wireless Key Recovery	203
Password Auditing Tools	203
Database Vulnerability Testing Tools	204

Test Management Packages	204
Who Should Perform the Tests?	205
Documenting the Tests	205
Analyzing the Tests and Their Results	205
Summary	207
Additional Resources	207
Books Related to Security Testing	207
Articles and Papers Related to Security Testing	208
Notes	209
Chapter 13 Conducting a Privacy Impact Assessment	211
Introduction	212
Privacy Laws, Regulations, and Rights	212
OMB Memoranda	213
Laws and Regulations	213
PIA Answers Questions	214
Personally Identifiable Information (PII)	215
Persistent Tracking Technologies	217
Determine Privacy Threats and Safeguards	218
Decommissioning of PII	219
System of Record Notice (SORN)	220
Posting the Privacy Policy	220
PIA Checklist	220
Summary	222
Books on Privacy	222
Notes	222
Chapter 14 Performing the Business Risk Assessment	225
Introduction	226
Determine the Mission	227
Create a Mission Map	229
Construct Risk Statements	230
Describe the Sensitivity Model	232
Impact Scale	233
Likelihood Scale	234
Calculating Risk Exposure	234
Lead the Team to Obtain the Metrics	235
Analyze the Risks	235

Make an Informed Decision	237
Accept the Risk	237
Transfer the Risk	238
Mitigate the Risk	238
Summary	241
Books and Articles on Risk Assessment	241
Notes	242
Chapter 15 Preparing the Business Impact Assessment	243
Introduction	244
Document Recovery Times	244
Establish Relative Recovery Priorities	245
Telecommunications	246
Infrastructure Systems	247
Secondary Systems	247
Define Escalation Thresholds	248
Record License Keys	249
BIA Organization	250
Summary	252
Additional Resources	252
Chapter 16 Developing the Contingency Plan	253
Introduction	254
List Assumptions	255
Concept of Operations	255
System Description	255
Network Diagrams and Maps	256
Data Sources and Destinations	256
Roles and Responsibilities	257
Contingency Planning Coordinator	258
Damage Assessment Coordinator	259
Emergency Relocation Site Adviser and Coordinator	260
Information Systems Operations Coordinator	260
Logistics Coordinator	260
Security Coordinator	261
Telecommunications Coordinator	261

Levels of Disruption	262
Procedures	263
Backup and Restoration Procedures	263
Procedures to Access Off-site Storage	264
Operating System Recovery Procedures	264
Application Recovery Procedures	265
Connectivity Recovery Procedures	265
Key Recovery Procedures	266
Power Recovery Procedures	266
Recovering and Assisting Personnel	267
Notification and Activation	267
Line of Succession	269
Service Level Agreements	269
Contact Lists	270
Testing the Contingency Plan	270
Appendices	271
Contingency Plan Checklist	271
Additional Resources	272
Chapter 17 Performing a System Risk Assessment	275
Introduction	276
Risk Assessment Creates Focus	276
Determine Vulnerabilities	278
Threats	280
Threats Initiated by People	280
Threats Initiated by Computers or Devices	280
Threats from Natural Disasters	281
Qualitative Risk Assessment	282
Quantitative Risk Assessment	283
Qualitative versus Quantitative Risk Assessment	287
Present the Risks	288
Make Decisions	291
Checklist	291
Summary	293
Additional Resources	293
Notes	294

Chapter 18 Developing a Configuration Management Plan	295
Introduction	296
Establish Definitions	296
Describe Assets Controlled by the Plan	297
Describe the Configuration Management System	298
Define Roles and Responsibilities	299
Establish Baselines	301
Change Control Process	302
Change Request Procedures	303
Emergency Change Request Procedures	303
Change Request Parameters	304
Configuration Control Board	304
Configuration Management Audit	306
Configuration and Change Management Tools	307
Configuration Management Plan Checklist	308
Summary	309
Additional Resources	309
Chapter 19 Preparing the System Security Plan	311
Introduction	312
Laws, Regulations, and Policies	312
The System Description	313
System Boundaries	315
System Mission	316
Data Flows	318
Security Requirements and Controls	318
Management Controls	325
Risk Mitigation	325
Reporting and Review by Management	326
System Lifecycle Requirements	328
Security Planning	329
Documentation for Managers	329
Operational Controls	330
Personnel Security	330
Physical and Environmental Controls and Safeguards	331
Administration and Implementation	332

Preventative Maintenance	333
Contingency and Disaster Recovery Planning	334
Training and Security Awareness	334
Incident Response Procedures	335
Preservation of Data Integrity	335
Network and System Security Operations	336
Technical Controls	338
Authentication and Identity Verification	338
Logical Access Controls	341
Secure Configurations	341
Interconnectivity Security	344
Audit Mechanisms	346
ISSO Appointment Letter	349
System Security Plan Checklist	351
Summary	353
Additional Resources	353
Notes	354
Chapter 20 Submitting the C&A Package	355
Introduction	356
Structure of Documents	356
Who Puts the Package Together?	357
Markings and Format	357
Signature Pages	358
A Word About “Not Applicable” Information	359
Submission and Revision	360
Defending the Certification Package	360
Checklist	362
Summary	363
Additional Resources	363
Chapter 21 Evaluating the Certification Package for Accreditation.....	365
Introduction	366
The Security Assessment Report	366
Checklists for Compliance	366
Compliance Checklist for Management Controls	368

Compliance Checklist for Operational Controls	380
Compliance Checklist for Technical Controls	392
Recommendation to Accredit or Not	404
Accreditation and Authority to Operate	405
Interim Authority to Operate	405
Evaluations by an OIG	407
Evaluations by the GAO	408
Checklist	409
Summary	410
Chapter 22 Addressing C&A Findings	411
Introduction	412
POA&Ms	412
Development and Approval	412
POA&M Elements	413
A Word to the Wise	416
Checklist	416
Summary	417
Chapter 23 Improving Your Federal Computer Security Report Card Scores	419
Introduction	420
Elements of the Report Card	420
Actions for Improvement	421
Trends	422
Summary	423
Chapter 24 Resources	425
Acronyms	428
Appendix A FISMA	431
Appendix B OMB Circular A-130: Appendix III	453
Appendix C FIPS 199	473
Index	485